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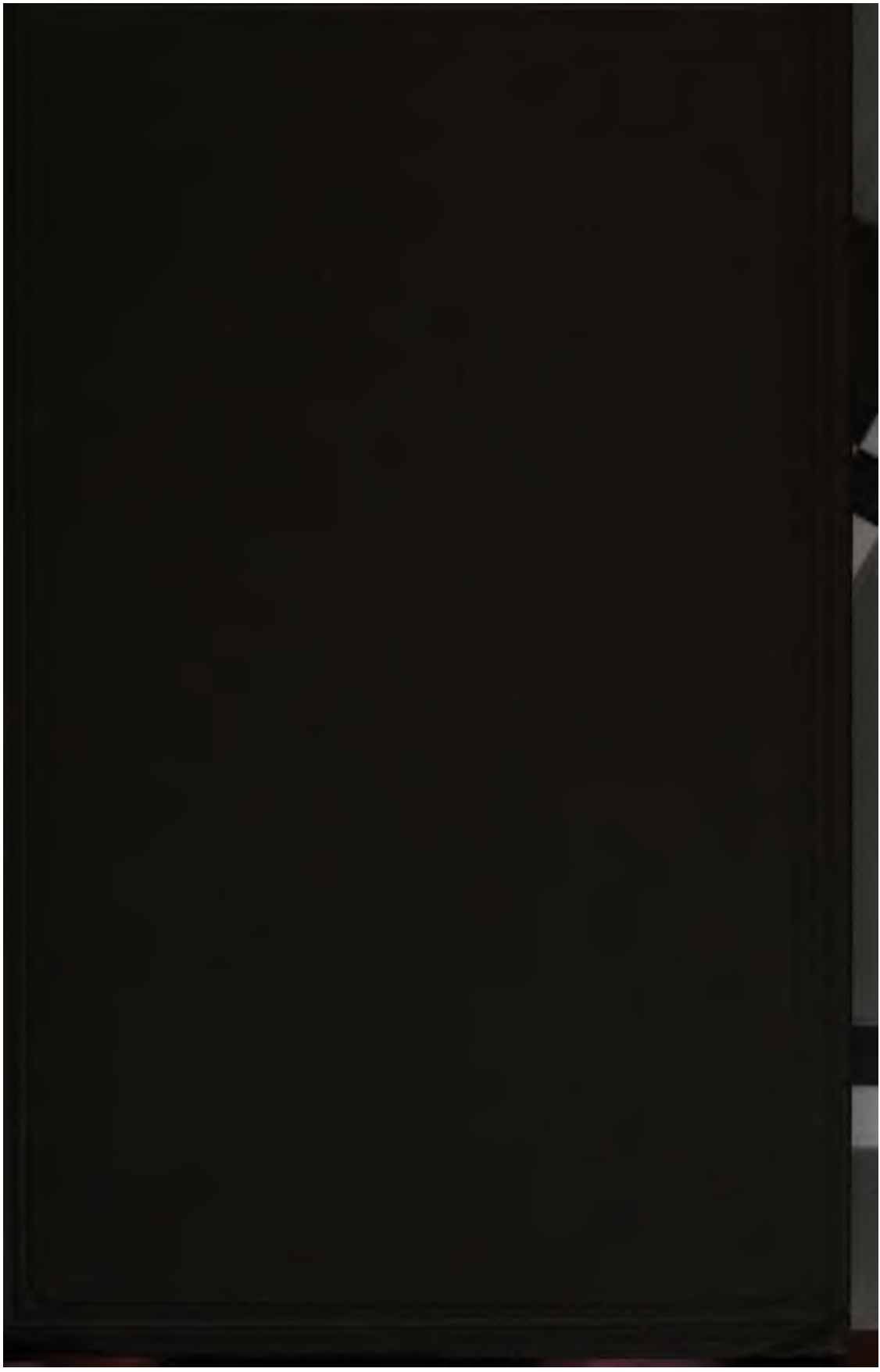

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SCOTLAND

IN

PAGAN TIMES

The Bronze and Stone Ages

THE RHIND LECTURES IN ARCHÆOLOGY FOR 1882

By JOSEPH ANDERSON, LL.D.

KEEPER OF THE NATIONAL MUSEUM OF THE
ANTIQUARIES OF SCOTLAND

EDINBURGH: DAVID DOUGLAS

1886

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PREFATORY NOTE.

THIS volume completes the series of the Lectures delivered by me as Rhind Lecturer in connection with the Society of Antiquaries of Scotland in the successive years 1879-82. The scheme of the Lectures was intended to embrace, in four annual courses of six Lectures each, a general review of the existing materials for the Archæology of Scotland. In view of their delivery to a popular audience, it seemed desirable to make the systematic nature of the investigation a matter of continuous demonstration. Regarding the historical method of dealing with prehistoric materials as wholly inapplicable to them, it behoved me to adopt and substitute a purely scientific method. Instead of commencing with the story of primeval man, and leading the narration downwards (as if drawing it from record), it was necessary to select a starting-place in the region of history bordering on the prehistoric, from which by tracing upwards, through the unrecorded ages, the interlinked succession of types and systems, I might penetrate as far towards the primitive conditions of human life in Scotland as the materials might serve

to carry the investigation. Accordingly the first volume was devoted to the Remains and Relics of the Early Celtic Church, and the second to those of the Christian Celtic Monuments and Metal-work, not necessarily Ecclesiastical,—the two volumes together comprehending "Scotland in Early Christian Times." The third volume was devoted to the Remains and Relics of the Iron Age, and the present volume to those of the Bronze and Stone Ages,—the two together comprehending "Scotland in Pagan Times."

I am indebted to Mr. James Fergusson for the use of the illustrations of Maeshow; to Mr. John Evans for illustrations of Bronze and Stone Implements (as noted in the Classified List); to the Ayr and Wigtownshire Archæological Association, through Mr. R. W. Cochran-Patrick, for illustrations of the Bronze and Stone Implements of Ayrshire and Wigtownshire from their published *Collections;* to the Society of Antiquaries of London for illustrations of Gold Ornaments, etc., from their *Proceedings;* and specially to the Council of the Society of Antiquaries of Scotland for their permission to use such of the Society's woodcuts as might be suitable for the illustration of the Lectures.

J. A.

14 Gillespie Crescent, Edinburgh,
27th February 1886.

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[2] Lent by Mr. John Evans.

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SCOTLAND IN PAGAN TIMES.

THE AGE OF BRONZE.

LECTURE I.

BRONZE AGE BURIALS.

HAVING dealt with the remains of the Iron Age culture and civilisation of Scotland in the last course of Lectures, I now proceed to deal similarly with those of the Age of Bronze. When they have been exhausted, the residue will represent the remains that are assignable to the Age of Stone; and to these the last three Lectures of the present course will be devoted.

In dealing with the remains of the Age of Bronze, we shall examine and consider, not only the nature and characteristics of the objects of bronze themselves, but also the nature and characteristics of the objects in other materials which have been found in association with them. It has been already shown that the circumstances which have controlled the actual associations, and the phenomena which determine the scientific associations of objects of various uses, purposes, and materials, are primarily those of the burial deposits of a period. Hence I shall select for description and examination of their typical characteristics—first, a series of burials which may be determined to belong to the Bronze Age by their essential circumstances or underground phenomena;

second, a series of burials characterised by special developments of their non-essential overground phenomena, with the view of ascertaining whether they also exhibit, or do not exhibit, the essential characteristics of Bronze Age deposits; and lastly, the hoards or accumulations of Bronze Age objects which have not been found associated with burial.

The Age of Bronze has been defined to be that stage of progress towards the existing culture and civilisation which manifested itself in the construction of cutting tools and weapons of bronze. When therefore we find a series of deposits in which no implement or weapon of iron occurs, but in which the tools and weapons, which, in the Iron Age, were made of iron, are found to be of bronze, although there may be along with them many other articles in other materials—iron alone excepted—it is clear that such a series of deposits must necessarily be assigned to the Age of Bronze. But practically it is not always possible, and fortunately it is not always necessary, to adduce the presence of bronze in a particular deposit, as part of the demonstration that it must be assigned to the Age of Bronze. There are other features which are so constant as to become typical, and when their typical character has been once established, they serve as indications no less certain and conclusive than the presence of bronze in its typical character. For instance, as we have already seen that a certain peculiar system of ornamentation was characteristic of such Iron Age objects in different materials as had surface decoration applied to them, we shall now see that the total absence of these peculiar forms of ornamentation becomes a characteristic feature of the surface decoration of the Age of Bronze. But we shall also see that the ornamentation which is applied to objects that are demonstrably of Bronze Age types, though it be ornamentation which is totally unlike that of the Iron Age, is yet of a nature so characteristic and peculiar as to

be absolutely distinctive of the age to which it belongs. The difference between the two systems will become apparent as we proceed, but it may be briefly formulated in the statement, that while the distinctive ornamentation of the Iron Age was a system of curvilinear decoration—the curves not being parts of circles—the distinctive ornamentation of the Bronze Age is a system of rectilinear decoration associated with occasional circles or parts of circles. Again, this distinctive system of ornamentation of the Bronze Age is associated with a very remarkable development of sepulchral pottery, the entire absence of which was found to be one of the most striking features of the Iron Age deposits of Scotland, so far as they are yet known. These highly-decorated urns of clay, which are such constant and characteristic accompaniments of the burial deposits of the Age of Bronze, present several varieties of form and purpose, but they are all characterised by one system of decoration. They are not found, even in the majority of cases, to be actually associated with implements of bronze; but the forms and the ornamentation having been established as typical, the fact that the typical form associates itself sometimes with bronze, but never with iron, is sufficient to invest it with the character of a typical form of the Bronze Age. The bearing of these explanatory remarks upon what is to follow will become apparent as we proceed with the examination of the series of burials now to be described.

In August 1876 and 1877 I was present at the excavation of a large cairn on the property of Mr. William Wallace of Newton of Collessie, in Fife, by whom the excavation was undertaken. The cairn was a mass of stones and boulders, covering an area of about 120 feet in diameter, and rising in the centre to a height of about 14 feet above the natural level. The work was continued over two seasons, and its

magnitude may be inferred from the fact that upwards of a thousand cart-loads of stones were removed in the course of the operations. Commencing at the south-east side, a width of about 8 yards on the ground level (as shown by the lighter shading on the ground-plan, Fig. 1) was cleared of

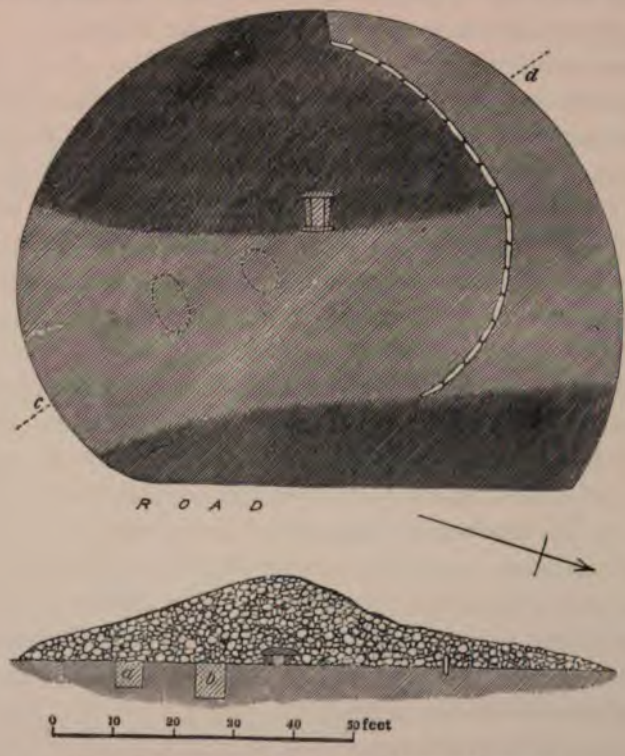


Fig. 1.—Ground-Plan and Section of Cairn at Collessie.
(Section on the line *cd*.)

the stones down to the subsoil. By this means the whole of the central portion of the cairn was examined, and two segments of its circumference were left. Of these segments, the one on the east side had been partially removed in the construction of the road, while that on the west had been appar-

ently used as a place of deposit for stones removed from the field in which the cairn was situated. The bulk of the cairn was found to be composed of gathered stones and boulders none very small, and few beyond such a size as could be lifted or rolled by two men. The larger stones were mostly in the lower part of the cairn. The stones throughout were simply agglomerated, not built or placed with any visible arrangement, except in one special feature. A few feet within the margin of the cairn there was a ring of sandstone slabs set on edge continuously round the cairn as far as we examined it, although we did not meet with it on the south-east side, where we first broke into the mass of the cairn. It seemed therefore as if it had not completely encircled the cairn, but it certainly formed a special feature in its construction around the major part of its circumference. It seemed as if it had originally formed the base-line or external boundary of the mass of loose stones composing the cairn, which had gradually slid down over it, and in process of time concealed it. The slabs of which this base-line was composed were from 3 to 4 feet in height, well bedded in the gravel on their edges. The space within this boundary, from which the mass of the cairn had now been removed, presented a remarkable appearance. It was covered with a layer of fine clay, mottled with marks of fire in separate spaces, some of which were several feet in diameter. In some of these spaces the ashes and charcoal of wood might be gathered in handfuls, and the whole surface of the site of the cairn was more or less strewn with minute particles of charcoal. In some places this intermixture of ashes and charcoal extended deep into the subsoil underneath the surface. This is accounted for by the fact that there were cremated burials in the gravel underneath the cairn.

In the cairn itself we found but one burial, placed on the natural surface of the ground in a cist of slabs, a little to the

south-west of the centre. The cist (see the Ground-Plan and Section) was composed of five slabs, four forming the sides and ends, and the fifth the cover. The interior of the cist was 4 feet 6 inches in length, and 3 feet wide in the centre, one end being slightly narrower than the other. The side stones had been pressed outwards by the superincumbent weight, and there was a vacant space of 15 inches in depth between the under side of the covering stone and the gravel in the bottom. In the gravel a few small portions of the unburnt bones of a human skeleton were found in a condition of extreme decay. A portion of a leg-bone found near the narrower end of the cist sufficed to determine the position of the body. Near the other end, and therefore placed either behind the shoulder or before the face of the corpse, a tall, handsomely-shaped, and finely-made urn of clay (Fig. 2) lay on its side, partially imbedded in the gravel. Half of its longitudinal section seems to have stood out of the gravel in the free space of the upper part of the cist, and, thus exposed to the action of air and moisture, may have softened and perished. But the half which remains is sufficient to exhibit the form and proportions, the workmanship and ornamentation, of this peculiar vessel. It stands 9 inches high, and measures 6 inches across the mouth. It is peculiarly graceful in shape, narrowing slightly below the brim, swelling again to its greatest width at about half its height, and

Fig. 2.—Urn found in the central Cist of the Cairn at Collessie (9 inches in height).

again contracting to a diameter of 4 inches across the bottom. It is thin and well made, of a fine paste, with a very slight admixture of particles of stone, and it has been well baked in an open fire. Although made without the aid of a wheel, it is almost regular in its outlines. Its ornamentation is arranged in bands, and consists of groups of parallel lines alternating with bands of zigzags and short oblique lines, produced by the impressions of a tool with teeth like those of a comb.

This one burial was all that was discovered in the cairn, and it was apparently the burial for which the cairn was constructed. It was an unburnt burial, and no relics of any kind were associated with it except the urn.

But on sounding the subsoil underneath the base of the cairn, two spots were discovered showing signs of previous disturbance. In one of these (shown in the Section at *b*), when the loose gravel was thrown out, the excavation assumed the form of an oval pit about 4 feet by 3, and 6 feet deep. In the bottom of this pit, imbedded among gravel largely mixed with ashes and charcoal, fragments of an urn of the same form as that found in the cist were discovered. Its fractures were old, and the pieces, about thirty in number, lay nearly together and on the same level.

Fig. 3.—Urn found 6 feet under the base of the Cairn (7 inches in height).

All the pieces of the vessel were recovered, except two, which do not affect its form as it is now reconstructed (Fig. 3). It measures 7 inches high, and

6 inches across the mouth. It is smaller in size, longer and straighter in the brim, and shorter in the bulge, than the first urn, but is of the same peculiar form, the same in texture and finish, and similar in the character of its ornamentation.

In another pit (shown on the Section at *a*), which had been excavated to a depth of 4 feet underneath the natural level, there appeared at that depth a layer of burnt bones, about an inch in thickness, spread over a space of 3 or 4 square feet. The fragments of the bones were perfectly white, broken into very small pieces, and exhibiting the cracked and contorted condition usually observed in deposits of this character. I recognised among them portions of a human skull and of the vertebral column. The atlas was entire, and seemed to be that of an adult. There was no appearance of an urn, but among the bones lay a finely-made, thin, and tapering blade of bronze (Fig. 4), still bearing on its broad end the mark of its handle. It had suffered some damage by the gravel under which it lay having been trodden over previous to the discovery of the deposit, but it is perfectly recognisable as a bronze blade of a special form, characterised by its thinness and its tapering, and by its attachment to the handle by rivets, the broken rivet-holes being still visible in the specimen. When first taken up, there were adherent to the surface of the bronze some patches of dark-coloured matter, covered with hair-like fila-

Fig. 4.—Bronze Dagger-blade found 4½ feet under the base of the Cairn (6 inches in length).

ments, and below the darker patches a browner and softer layer exhibiting the appearance of decayed woody fibre. When examined with a pocket lens, this appearance of woody structure was distinctly visible among the adhesive mass of wet ashes, bone-dust, and earth, which covered the surface of the blade. Parts of the surface of the darker upper layer were also seen to be covered with a coating of short straight filaments, of such an excessively fragile nature that the slightest touch was sufficient to obliterate their form. As much of this filamentary coating of the dark-brown layer of woody fibre on the blade as suffices to demonstrate its character with certainty has been preserved. When dry, it separated from the blade in small, twisted, slightly curling masses, which on the under side have a leathery appearance, and yield the odour of leather when burnt. These masses are extremely brittle, and difficult to deal with as mounted objects for microscopic examination, but by saturating one of them in warm turpentine, and subjecting it to pressure, I was able to mount it as a transparent object in balsam. The microscope then resolved it into a compacted mass of agglutinated hairs mingled with cellular structure. Under polarised light, the hairs exhibit the same appearance and structure as the dark hairs of a Shetland cow, taken from one of the *rivlins*, or Shetland shoes of untanned hide, in the Museum, with which I have compared them. From this I infer that when the blade was placed among the burnt bones of its owner, it had not, like them, passed through the fire, but had been deposited in its sheath, as it used to be worn, the sheath being formed of wood covered with cowhide, with the hair outwards. Close by the blade was found the gold mounting of the butt-end of

Fig. 5.—Gold Mounting of the Handle of the Bronze Dagger found at Collessie.

its handle (Fig. 5). It is in the shape of a thin fillet nearly $\frac{3}{8}$ inch broad, and worked into an oblong mounting $1\frac{1}{4}$ inch in length, and $\frac{1}{2}$ inch in the width of its opening. Its ornament consists of four parallel longitudinal flutings in *repoussé* work.

I have described this cairn and its associated burials thus minutely, because it is the only cairn of the Bronze Age which I have seen excavated. Many others have doubtless been met with, but the instances in which the phenomena of the burials and the features of the structure have been specially investigated and placed on record are exceedingly few, and the details are of the most meagre and unsatisfactory description.

For instance, a great cairn, which is known by the name of Cairn Greg, on the estate of Linlathen, in the parish of Monifieth, in Forfarshire, was opened in 1834 by Mr. Erskine of Linlathen, in presence of the late Lord Rutherfurd and Mr. George Dundas, Advocate, and reopened in 1864 by the late Dr. John Stuart and a number of other antiquaries. It affords a curious illustration of the difficulty of obtaining full and precise information as to the most obvious facts, that Dr. Stuart, who wrote two separate accounts of this latter examination of the cairn,[1] gives no hint of its size; and the nearest approach we obtain to an idea of its actual dimensions is from a notice in the New Statistical Account of Forfarshire, where it is described as "a large heap of stones." Dr. Stuart was chiefly interested in the alleged occurrence of a stone sculptured with the so-called "elephant" symbol in connection with the cist which occupied the centre of the cairn; but this has been already referred to in its proper connection,[2] and has no bearing on the present

[1] *Proc. Soc. Antiq. Scot.*, vol. vi. p. 98, and *Sculptured Stones of Scotland*, vol. i.

[2] *Scotland in Early Christian Times* (Second Series), p. 181.

investigation. The cairn is placed on a rising ground commanding an extensive view of the surrounding country. It covered a single burial, placed in the centre of the cairn, upon the natural surface of the ground. It is proper to state, however, that there is not on the record of the investigation any indication that more burials than that in the central cist were looked for, and it seems certain that no part of the subsoil underneath the cairn would at that time have been examined. The central cist was formed of large slabs of freestone, covered by an enormous slab measuring 7 feet in length by 4½ in breadth, on which rested another of still greater size and weight. The interior of the cist measured 4 ft. 10 inches in length by 2 ft. 9 inches in breadth, and 2 ft. 10 inches in depth. As in the case of the Collessie cist, its bottom seemed to be paved with small water-worn pebbles; and when it was first opened, in 1834, an urn (Fig. 6) of the same form as the Collessie example, but smaller and more rudely made, was found lying on its side near the centre of the cist, on the south side, the direction of the axis of the cist being nearly east and west. The urn, which stands 7 inches high, is ornamented with a rough scoring of zigzags round the upper and lower parts. Near the west end of the cist was found a thin bronze blade of triangular form (Fig. 7), bearing at the butt-end the mark of the handle, and still retaining the three rivets which fastened it, in the rivet-holes. There is no indication

Fig. 6.—Urn found in a Cist in the centre of the Cairn at Linlathen (7 inches in height).

in the record from which it can be determined whether the interment in the cist was that of a burnt or an unburnt body, although the probability is that it was the latter.

Fig. 7.—Bronze Dagger (4½ inches in length) found in a Cist in the Cairn at Linlathen. (One of the rivets is shown apart from the Blade.)

In Cairn Greg we have thus a repetition of certain special features of the Collessie burials. There is the interment in a cist set on the surface of the ground and covered with an enormous cairn of stones; the interment is presumably unburnt, and associated with a tall urn of the same peculiar form; and finally, we have again the association with the interment of a thin triangular bronze blade fastened to the handle by rivets.

At Cleigh, near Lochnell, Argyllshire, there are the remains of a cairn 60 feet in diameter, from which the stones had been removed to be utilised in modern farm-buildings. It contained a central cist, which the process of removal laid bare, and an urn which was found in it associated with the interment was given to a person living in the neighbourhood as a visitor, and lost. There is no record of the other phenomena of the interment. Near it, however, another cairn was partially removed, so as to expose the cist. It is not known whether an urn had been associated with the burial in this cairn, but on clearing out the open cist, Dr. Angus Smith was fortunate in finding a beautiful bronze blade of this peculiar thin and triangular form (Fig. 8), which had been unnoticed by the parties who first opened the cist.[1] It measures 5 inches in length by

[1] *Proc. Soc. Antiq. Scot.*, vol. x. p. 84.

2¼ inches broad at the base, and is almost perfect in outline. It bears the mark of the handle, with the usual lunation in the middle of the butt-end, the terminal outline of the haft being further marked on the blade by a double row of punctulations impressed by a punch. The three rivets are still in the rivet-holes, and have broad round heads.

In these two interments we have the same features of cairn-burial, with a central cist, the interments being accompanied by an urn, and by the special form of the thin triangular blade of bronze fastened to the handle by rivets.

Fig. 8.—Bronze Dagger-blade, from a Cist in a Cairn at Cleigh (5 inches in length).

Fig. 9.—Bronze Dagger-blade found in a Cist at Drumlanrick (4½ inches in length).

There is in the Museum another example of this typical blade of bronze, which is said to have been found in a cist at Drumlanrick, in Perthshire (Fig. 9). Unfortunately no record of the circumstances of its discovery exists, but it is a blade of precisely the same form and character as those found associated with the interments that have

been already described. It measures 4½ inches in length, and the butt-end bears the mark of the handle to which it has been attached by three rivets, two of which are still in their places.

In clearing away a cairn on the farm of Callachally at Glenforsa, in the island of Mull, two urns were found. No record of the phenomena of the interments exists, but the fragments of the urns and the two objects found with them are preserved in the Museum. One of the urns (Fig. 10) was of the same form as those from Collessie and Cairn Greg, 6½ inches high, and 6 inches wide at the mouth. It is ornamented with narrow parallel bands of zigzags and short straight lines, the bands passing transversely round the circumference of the vessel. These narrow bands alternate with broader bands of a different variety of ornamentation. They are filled with a series of acutely-pointed triangular spaces, each alternate triangle filled with zigzag lines drawn parallel to each other. The lines forming the long equal sides of the triangles appear to have been stamped with the teeth of a comb. The second urn was also of the same form and character, but differed in the arrangement of its ornamentation. The lower part is covered with scorings of zigzags, the upper having a band of triangular spaces alternately plain and filled with parallel

Fig. 10.—Urn found at Glenforsa, Mull (6½ inches in height).

lines. With the urns there were found the fragments of a thin triangular bronze blade, and an implement, in polished stone (Fig. 11), thin and rectangular in form, with slightly rounded corners, and pierced by a small hole in the middle of its breadth close to each end. It measures 3¼ inches in length by 1¼ inch in breadth, and is formed of a hard greenstone, symmetrically shaped and carefully polished.

Fig. 11.—Wrist-guard of polished stone found with the Urn at Glenforsa, Mull (3¼ inches in length).

In this case we have again the same features of cairn-burial, with the same form of urn, and the same thin, triangular blade of bronze, but with an additional feature in the occurrence of an implement of polished stone. The

Fig. 12.—Wrist-guard of polished Felstone found with an Urn at Fyrish. Back and front Views. (4½ inches in length.)

probable use of this implement is not directly suggested by its form, and there is nothing in the circumstances of its

association in this instance which suffices to reveal its purpose. But other implements of similar form and character have been occasionally found in somewhat similar associations in Scotland, and instances have occurred in England, which are directly suggestive of the probable purpose which has been assigned to them.

One found at Fyrish, near Evanton, in Ross-shire, was also associated with an urn accompanying an unburnt burial. The implement (Fig. 12) is formed of a hard, close-grained greenish stone, finely polished, and perforated by a small hole in each corner. It measures 4½ inches in length by 1¼ inch in breadth, narrowing slightly in the middle,

Fig. 13.—Urn found at Fyrish, Evanton, Ross-shire (6 inches in height).

and curved in the cross-section. The urn (Fig. 13) with which it was associated is 6 inches high, and ornamented by bands of parallel lines and zigzags. It differs a little from the tall variety, with slightly everted lip and bulging sides, with which we have previously become acquainted. It is thicker and coarser in texture, is almost as wide as it is high, and though somewhat shorter in the upper part, is bowl-shaped below, and tapers to a base of 3 inches.

A similar implement of greenstone, found in a sepulchral tumulus in Skye, measures 2¼ inches in length by 1⅜ inch in breadth. It is of the same form, convex on its upper surface, and concave interiorly, finely polished, and ornamented at the ends with a border of slightly pitted ovals.

In 1821 a cist was discovered 8 feet under the apex of a conical mound of sandy loam in the parish of Cruden, Aberdeenshire. The cist was formed of slabs of gneiss, and measured internally 4 feet 3 inches in length by 2 feet 2 inches in breadth, and 2 feet 2 inches deep. Its bottom was the sandy soil of which the mound was composed, and its cover was formed of a large rough slab of slaty rock and a flattish block of granite. In the cist were two skeletons—one of a full-grown man, the other of a child; and with them there were the remains of a dog. Besides these human and animal remains, the cist also contained two urns, two flint knives, seven arrow-heads of flint, and an implement of polished greenstone of this special form, 4¼ inches long, rounded on one face, hollow on the other, and pierced with a small hole at each corner. In this case, the association of this peculiarly formed stone object with seven arrow-heads of flint is suggestive of its connection with the use of the bow, and the fact that the bracers of bone, which in more recent times were strapped on the left wrist to protect it from the recoil of the bowstring, are curiously like these stone objects in form and character, has given force to the suggestion.

In two instances in England, the stone implement has been found actually in contact with the bones of the fore-arm. In a grave-mound on Roundway Hill, near Devizes, such an implement was found between the bones of the left fore-arm of an unburnt human skeleton. It is a flat plate of chlorite schist, 4½ inches in length and 1⅜ inch in breadth, finely polished, and pierced by four small holes, countersunk on both sides at the four corners. Along with it there were

also found associated with the burial a single arrow-head of flint, and a thin bronze blade, with a tang for insertion in the handle.

In a grave-mound at Kellythorpe, near Driffield, an implement of the same character was found lying on the bones of the right fore-arm of an unburnt human skeleton, while underneath the bones was a small bronze buckle, apparently the fastening of the strap by which the implement had been bound upon the wrist.[1] It is similar in form to the others which have been described, concave on the under side, 5 inches in length by 1¼ inch in breadth, and having in the four perforations four pins or rivets of bronze, with gold heads. The other articles found associated with this burial were a thin bronze dagger-blade with a wooden sheath and a handle of wood, some amber beads, and an urn of the tall variety, with thin and slightly everted lip and bulging sides, which has been already described as occurring in association with similar implements in Scotland.

It thus appears that these peculiar implements of polished stone have been found in association with arrow-heads of flint, and that, when found in the position in which they were worn, they occupied the place on the right and left fore-arm which the "bracer" would have occupied on the fore-arm of a right-handed and a left-handed bowman. It appears also that we have, in this series of burials, a set of typical phenomena, consisting in the association of implements of stone with certain implements of metal—that metal being bronze. The presence of this thin knife-like blade of bronze among the grave goods of these interments is the most distinctive of their peculiar characteristics. It separates the burials in which it occurs, on the one hand from the typical burials of the Iron Age, which have been already described, and on the other hand from the typical burials of the Stone

[1] *Archæologia*, xxxiv. 254, Plate xx. fig. 7, and xliii. 427.

Age, which have yet to be described. It separates them from the burials of the Iron Age, because it has never yet been found either with implements of iron, or with objects exhibiting the special forms or bearing the special decoration of the Iron Age. It separates them from the burials of the Stone Age because it is itself of bronze, and, though it is often found in association with implements of stone, it brings these stone implements and the burials with which they are associated into the category of Bronze Age types.

Returning now to the further consideration of the series of burials that are characterised by the presence among their grave goods of a blade of bronze, we shall find the blade, which is their characteristic feature, presenting occasional differences of form and association. But whatever may be the direction or the extent of these variations—whether its form may be triangular, or oval, or disc-shaped; whether it may be attached to its handle by rivets or by a tang, or by casting the handle in the metal itself,—the typical characteristic of the implement is that it is always an instrument of cutlery fashioned in bronze. It may be styled a dagger, a knife, or a razor; it may be associated with burnt or unburnt interments, and with urns of different varieties of form; but its essential character and significance are constant.

At Stobshiel, in Haddingtonshire, in 1881, an interment after cremation was discovered, by the plough turning up the broken bottom of an urn, inverted over a deposit of burnt bones, among which there was found a portion of a thin flat triangular blade of bronze, perforated at the base by two rivet-holes. The urn (Fig. 14) is of a peculiar type, flower-pot-shaped below, and widening upwards to about the middle of its height, from which it contracts again towards the brim. The ornamentation is confined to a narrow band underneath the brim, and consists simply of intersecting zig-

Fig. 14.—Urn found at Stobshiel, Haddingtonshire (14½ inches in height).

Fig. 15.—Urn found at Shuttlefield (9 inches in height).

zags. Two slightly projecting mouldings encircle the plain part, and one forms a border immediately underneath the ornamented rim. It measures 14½ inches in height, the width across the mouth being 10½ inches, across the widest part in the middle 12 inches, and across the bottom 5 inches.

In April 1880 a chance passer-by observed a labourer extracting bones from a hole in the brow of a sandy knoll in a field at Shuttlefield, near Lockerbie. On inspecting the place, he found that the man had discovered the site of a cremated burial. The burnt bones had been collected, and placed in a shallow excavation in the sandy eminence, with a large flowerpot-shaped urn of baked clay (Fig. 15) inverted over them. The bottom of the urn had been so near the surface that the plough had passed through it, and the labourer's attention being attracted to the rounded cavity which was thus disclosed, and the curiosity of both aroused by the fact that it contained a deposit of burnt bones, a complete examination of the place was made, and the remaining portion of the urn unearthed. It was but 9 inches high, having been originally perhaps 14 or 15 inches in height, and 9 inches diameter at the mouth. From its brim the sides are nearly perpendicular for a depth of about 4 inches, to a raised external ridge, which passes transversely round it at the junction of the perpendicular part with the part where it begins to slope towards the bottom. The sloping part is plain, the upper part ornamented with irregularly placed oval indentations. Among

Fig. 16.—Bronze Blade found in the Urn at Shuttlefield (actual size).

the burnt bones which it protected, a small thin blade of bronze (Fig. 16) was discovered. It is unfortunately broken, but enough remains to show the special form and character of the implement. In its tapering form, its thinness, and the presence of a single rivet-hole at the base, it resembles the blades which have been already described; but it presents points of difference which are more characteristic than these points of resemblance. Its outlines are oval towards the base; it is not flat, but swells in the centre to a distinct longitudinal midrib, and it terminates at the butt-end in a flattened tang-like prolongation, pierced by a central rivet-hole. These features are suggestive of a transition from a type that is triangular, flat, and riveted at the base, to a type that is oval in outline, swelling in the middle, and tanged at the base. Such a form is not unfrequently found associated with similar interments.

Fig. 17.
(1) Bronze Blade found in a Tumulus at Lierabol, Kildonan, Sutherland.
(2) Section across the blade (actual size).

For instance, a plain oval blade of bronze of the form here shown (Fig. 17), thinning to the point end and to the edges (as indicated by the cross-section), and showing the fracture of the tang which has been broken off the thicker extremity, was found among the incinerated bones under an inverted urn which had been placed about 3 feet under the surface, near the outer margin of a tumulus at Lierabol, in the Strath of Kildonan, Sutherlandshire. It measured about 2 inches in length by $\frac{7}{8}$ inch in its greatest breadth, and nowhere exceeds $\frac{1}{10}$ inch in thickness.

A small oval tanged blade of bronze, which has not been preserved, measuring 2½ inches in length, by ¾ inch in greatest breadth, was found in 1862, in a grave-mound of peculiar form at Burreldales, in Aberdeenshire. The form of the grave-mound (as shown in the accompanying ground-plan, Fig. 18) was that of a circular eminence, of low elevation, about 30 feet in diameter, with a depression in the centre, and surrounded at the distance of about 12 feet from its base by a raised ring of lower elevation, measuring altogether about 50 feet in diameter. Two stones (marked 1 and 2 in the Plan) appeared in the outer ring. One burial was found in the external ring (marked 4), and two (marked 3 and 5) in the central mound. The burials were of burnt bodies, the incinerated bones deposited in urns. The blade was found with the burial marked 5.

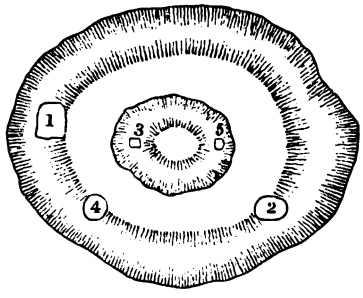


Fig. 18.—Diagrammatic Ground-plan of Tumulus at Burreldales (not to scale).

Sir John Clerk describes the excavation of a grave-mound at Newbigging, near Penicuik, previous to 1725. It contained three urns with incinerated bones, and in one of the urns was found a small oval tanged bronze blade, ornamented in the centre by an oval filled with chequers of lozenge-shaped spaces alternately plain and filled with cross-hatched lines.[1]

A similarly ornamented blade of the same form and

[1] Gordon's *Itinerarium Septentrionale* (1726), p. 116, and Plate iv. Fig. 8. The cairn is described in the Appendix to the *Itinerarium*, pp. 170 and 178.

character was found about the year 1834 in a grave-mound or cairn at Rogart, in Sutherlandshire. In the centre of the cairn was a cist of slabs, and among the

Fig. 19.
(1) Bronze Blade found in a Grave-mound at Rogart, Sutherland (actual size).
(2) Section across the blade.

Fig. 20.
(1) Bronze Blade found in a Cairn at Balblair, Creich, Sutherland (actual size).
(2) Section across the blade.

bones in the cist the blade (Fig. 19) was found. No urn was observed by the persons who removed the cairn, and the record does not state whether the bones were burnt or

unburnt. The blade is fortunately preserved, and, though imperfect, is an instructive example of this peculiar variety of the rarest of all forms of these bronze implements. The tang measures nearly an inch in length, and what remains of the blade 2¼ inches in length by 1¼ inch in greatest breadth. A border of punctulations surrounds the central oval, which is ornamented by lozenge-shaped spaces alternately plain and filled with fine lines crossing each other obliquely.

About the year 1848, a crofter at Balblair, in the parish of Creich, Sutherlandshire, removing stones from a cairn for agricultural purposes, discovered a coarsely-made urn of considerable size inverted over a deposit of burnt bones upon a flat stone.[1] He removed the urn, but as his wife refused to admit the "uncanny" thing within the door of their dwelling, it was set outside on an adjoining knoll, and became a mark at which the passing schoolboys exercised their skill in stone-throwing until it was smashed to pieces. Among the bones covered by the urn there was found a small bronze blade (Fig. 20), so thin that it suffered a good deal from rough handling.[2] In its imperfect condition it measures 4½ inches in length by 1¼ inch in greatest breadth. It is, or rather has been, of an oval, pointed form, with a tang at one end about an inch in length, for insertion in the handle. The middle portion of the blade is raised, and ornamented in the centre of the oval raised portion by lines crossing each other diagonally. The marginal segments are broad, flat, and thin, running to an edge of extreme tenuity and sharpness. From their oval shape, their wide thin margins, and uniform sharpness of edge all round, these blades are

[1] *Proc. Soc. Antiq. Scot.*, vol. vii. p. 475.

[2] This blade, and those found at Rogart and Lierabol, are preserved in the Duke of Sutherland's Museum at Dunrobin.—*Proc. Soc. Antiq. Scot.*, vol. x. p. 431.

obviously more of the nature of implements than weapons, although it is as obviously impossible to specialise their purpose more closely.

Fig. 21.—Three tanged Blades of Bronze found at Bowerhouses, Dunbar (one-half actual size).

Sometime about the year 1822, in the course of levelling ground at Bowerhouses, near Dunbar, two urns of considerable size, one of them being nearly a foot and a half in height, were discovered in a tumulus, with deposits of burnt bones. No details of the phenomena exist, and it is uncertain whether the four bronze objects found were associated with one or more of the burials. They are vaguely stated to have been found "in two urns, mixed with burnt bones." One of these four articles is a bronze socketed axe-head. The other three are thin oval tanged blades (Fig. 21), differing from those previously described, by their truncated form at the butt-end, and the bifid termination at the free end. Two of them are pierced with small holes immediately below the junction of the bifid points.

Fig. 22.—Bronze Blade found in the Shannon (one-half actual size).

As these blades are much broken, I place with them for comparison a perfect blade (Fig. 22), of the same bifid form and character, possessing a similar perforation, and bearing on its raised midrib a triply repeated ornament of concentric circles. It was found in Ireland in the bed of the Shannon.

Fig. 23.—Bronze Blade found at Kinleith, Currie, near Edinburgh (actual size).

A larger and more elaborately constructed disc-shaped blade of this bifid character (Fig. 23), having its handle cast in the same piece with the blade, was found in gravel near the bed of the Water of Leith, at Kinleith, near Currie, in Midlothian, in 1863, and is now in the National Museum. It has a loop at the free end of the handle, and is both

larger and of stronger make than any of the other specimens. This blade was not found in association with an interment, but it is clearly of the same character as those that have been described, and it is the only example known in Scotland, which has not been found in connection with a burial.[1]

Though numerous casual discoveries of single interments of the character of those that have now been described may have given rise to the opinion that they are usually found as isolated examples, it requires the negative evidence of an exhaustive examination of each separate site to warrant the conclusion that the casually discovered grave is not one of a group. Where such exhaustive investigations have been made, it has usually been found that the site of the casually discovered interment is really a cemetery. In point of fact, the gregariousness of these cremation burials is one of their most striking characteristics, implying the use of the site as a family or tribal burying-ground over a long period of time. These cremation cemeteries are often unmarked by any external sign, but they are usually placed on a natural knoll with an open gravelly subsoil, or they are found spread over the summit of a hillock of sand.

Such a cemetery was discovered a few months ago in excavating a sand-pit at Magdalen Bridge, Midlothian, between Joppa and Musselburgh. The site was close to the shore of the Firth of Forth, and the surface level of the ground not more than 14 feet above high-water mark. Of the nine or ten urns that were discovered, seven are now reconstructed, and placed in the National Museum. The typical interment had associated with it a thin bronze blade

[1] Similar curved, disc-shaped or crescent-shaped blades have been found in France, Switzerland, and Italy. They have been supposed to be razors by some of the continental archæologists. The continental examples appear to belong to the later portion of the Bronze Age, and, in some instances at least, to the early Iron Age.

(Fig. 24), of the oval tanged form which has been already described, the centre ornamented with a series of lozenge-shaped spaces alternately plain and filled with parallel lines. The blade was found among the burnt bones enclosed within the urn, but little care was taken by the workmen, either to preserve such a fragile article from rough handling, or to notice the special circumstances of the separate interments. The urn in which the blade was found (Fig. 25) measures 12 inches in height and 9½ inches across the mouth. The lower part is flowerpot-shaped, and plain, encircled by a slightly raised and rounded moulding at about two-thirds of its height from the bottom. A similar moulding separates the ornamented band underneath the brim from the plain part below it. The upper part, which alone is ornamented, narrows slightly from the moulding to the brim. The ornamentation impressed in the clay when it was soft is peculiarly arranged in a broad band divided into panels or spaces, bordered above and below by three parallel lines, and separated from each other by four vertical lines. These spaces are filled with different arrangements of parallel lines, forming different patterns of zigzags, or lines crossing each other obliquely. The interior of the rim is also ornamented by oblique lines.

Fig. 24.—Bronze Blade found in an Urn at Magdalen Bridge, near Musselburgh (actual size).

The second urn (Fig. 26), which is similar in form, slightly

narrowing to the brim from the upper of the two mouldings, is also similar in the character and arrangement of its ornamentation. It is the largest of the urns found in this cemetery, measuring 16 inches in height, by 12½ inches in diameter across the mouth.

Fig. 25.—Urn found at Magdalen Bridge (12 inches in height).

The third urn (Fig. 27), which is of the same peculiar form, having the lower part flowerpot-shaped, and narrowing to the brim from its greatest diameter upwards, is surrounded by three mouldings, and the ornament consists of a simple band of intercrossing zigzags. It resembles the two previously described in having the interior of the rim ornamented by oblique lines. It is also remarkable for its great

width in proportion to its height. It measures 13 inches high, and 14 inches in its greatest diameter at the shoulder, narrowing to 11 inches diameter across the mouth.

Fig. 26.—Urn found at Magdalen Bridge (16 inches in height).

The fourth urn (Fig. 28) is smaller, and resembles the previous three in its contraction, both upwards and downwards, from its greatest width, which in this case is about

the middle of its height. Above this it contracts gracefully in two stages with reversing curves, the slightly everted rim answering to the mouldings below. The ornamentation is disposed in two bands, separated by a boldly rounded moulding. The lower band contains a series of intercrossing zigzags, separated from the plain space below by a line of

Fig. 27.—Urn found at Magdalen Bridge (13 inches in height).

punctulations, and the upper band contains the peculiar pattern known as "herring-bone." The lines are deeply impressed in the clay by an implement notched or toothed like a comb. This is the smallest of the urns found in this cemetery. It measures 10½ inches in height, and 7½ inches across the mouth.

The fifth urn (Fig. 29) is of the same shape, narrowing

upwards and downwards from the shoulder, but it differs from the previous four in having a deep overhanging brim, and presents no mouldings. The ornamentation is confined to the part above the shoulder, and consists of oblique parallel lines on the band underneath the rim, and on the rim itself a band of triangular spaces each filled with oblique lines. The interior of the rim has a triplet of lines drawn

Fig. 28.—Urn found at Magdalen Bridge (10¼ inches in height).

round the sloping margin. The vessel measures 12¼ inches high by 9 inches in diameter.

The sixth urn (Fig. 30) is of the same form, and ornamented in much the same manner, except that the band below the overhanging rim consists of intercrossing zigzags, and the ornamentation of the interior of the brim is a continuous zigzag. It measures 12 inches high, and 8½ inches diameter across the mouth.

The seventh urn (Fig. 31) differs in shape from all the others. It is widest at the mouth, tapering gradually to the base. Its ornamentation consists of a narrow band of zigzags of four parallel lines round the exterior rim, and underneath this ornamented band two slightly raised and rounded mouldings encircle the plain part of the vessel. It

Fig. 29.—Urn found at Magdalen Bridge (12¼ inches in height).

measures 13¾ inches in height, and 10 inches across the mouth.

Fragments of other two urns of the same general character were subsequently brought to the Museum from the same place, and besides the cremated burials accompanied by cinerary urns, there were also discovered a burial, unburnt, in a cist of stones, and another unburnt burial simply deposited

in the soil without any cist. A small urn, 3 or 4 inches high, was also reported by the workmen, but it was said to have crumbled to fragments, and the fragments were not seen by any one capable of describing them.

The presence of the bronze blade found in connection with the urn first described, and the occurrence of a minute

Fig. 30.—Urn found at Magdalen Bridge (12 inches in height).

fragment of the metal with a green stain, characteristic of the presence of bronze, upon the bones found in another urn, establish the fact that the interments in this cemetery are interments of the same age and condition of culture as those that have been previously described. The phenomena are not the same in every case, but there is a sufficient family

likeness between the groups to warrant us in concluding that they cannot be far apart in time, or widely separated in the scale of culture. The form of the urns is the same, their ornamentation is of similar character, the burial customs are similar, and the associated objects are identical in form and character.

Fig. 31.—Urn found at Magdalen Bridge (13¾ inches in height).

The same conclusions may be drawn from the phenomena of a remarkable cremation cemetery which was discovered some years ago at Lawpark, near St. Andrews. About twenty urns of this cinerary type were obtained from it, varying in size from 10 to 16 inches in height, and from 8 to 11 inches

in diameter. Two small oval tanged bronze blades which were found among the burnt bones are preserved in the University Museum at St. Andrews.

Recently, at Shanwell, near Milnathort, Kinross-shire, the excavation of a gravelly knoll disclosed a considerable number of burials pertaining to an ancient Bronze Age cemetery, of the same character as those at Magdalen Bridge in Midlothian, and Lawpark, near St. Andrews.

Fig. 32.—Urn found at Shanwell (14 inches in height).

The deposits were burials after cremation, mostly unprotected by cists, but accompanied by urns of the same form and character as those found in the two cemeteries which have been previously described. One of the urns (Fig. 32), which is now in the Museum, measures 14 inches in height, and nearly the same in diameter at the mouth. It is ornamented round the brim by a series of impressed lines

of twisted cord, arranged in opposing triangles with plain lozenge-shaped spaces between. It also presents the feature, so common in these large cinerary urns, of a double raised moulding passing round the vessel underneath the ornamented brim. Among the burnt bones of one of the deposits there was found a fine specimen of the thin oval

Fig. 33.—Bronze Blade found with the Urns at Shanwell—both sides and section across centre (actual size).

bronze blade (Fig. 33), beautifully ornamented on both sides with an engraved pattern of lozenge-shaped chequers within a border surrounding the central portion of the blade. It measures 3½ inches in length, and 1 inches in greatest width,

and differs from the Sutherlandshire blades in having a broad flat tang pierced by a central rivet-hole. With another of the deposits a small quadrangular whetstone, similar to that found at Stenton,[1] was also discovered.

Looking to the fact that these bronze blades are so often found associated with this typical form of urn, and considering that out of so many instances of the occurrence of this form of urn in the same cemetery, only one or two present the distinctive feature of the associated blade which attributes them to the Bronze Age, it seems a fair inference that the form of the urn alone, without the presence of the blade, may be to a certain extent accepted as evidence of the period to which the interment falls to be assigned. No such urn has ever been found associated with implements of iron, or with objects bearing the characteristic ornamentation of the Iron Age. They are often associated with bronze, and if the absence of bronze from the interment may in some cases be taken to mean the presence among the living of a condition of culture in which the use of metals was unknown, it would obviously be unscientific to conclude that this must necessarily have been the case in every such instance. We know that this form of urn belongs to the Bronze Age, and we shall continue to speak of it as a Bronze Age form in describing other instances of its occurrence in which no bronze has been found with it.

In 1878, Mr. Bell, the tenant of the farm of Sheriff-flats, near Thankerton, in Lanarkshire, discovered the remains of a cremation cemetery on the summit of a gravelly knoll near the bank of the Clyde. A large part of the knoll had been previously removed, probably at the time when the neighbouring road was made, and what was left undisturbed was merely a portion of its original area. Mr. Bell found three urns, and a few days afterwards I visited the spot, when

[1] See the figure of the Stenton whetstone (Fig. 116), p. 93.

three more were found. The largest entire urn (Fig. 34) is of the same form as that last described from Magdalen Bridge (see Fig. 31), being widest at the mouth, and tapering gradually to the bottom. Its decoration is also similarly confined to a narrow band round the exterior of the rim, and it presents the same feature of two mouldings encircling the

Fig. 34.—Urn found at Sheriff-flats (13 inches in height).

part of the urn below the ornamented band. The ornamentation is a series of intercrossing zigzags, the lines of which are not straight, but slightly curved, and appear as if feebly drawn by an unsteady hand. The inside of the lip is ornamented in a similar manner. The urn measures 13 inches in height, and 12 inches in diameter across the mouth.

The second urn (Fig. 35), which must have been of larger size, but is now unfortunately incomplete, is of the same form as the majority of the Magdalen Bridge urns, narrowing upwards as well as downwards from the shoulder, the outlines gracefully formed in reversing curves. One moulding remains, and the ornamentation has been entirely of groups of obliquely crossed lines.

Fig. 35.—Urn found at Sheriff-flats (12½ inches in height).

The third urn (Fig. 36), which is much smaller, also narrows from the shoulder both upwards and downwards. It is encircled by two mouldings close together at the shoulder, and the ornamentation consists of a series of horizontal lines of impressed markings, as with the teeth of a comb, encircling the body of the urn about half an inch apart. This urn, which is 5¾ inches high, and 5½ inches

in diameter at the mouth, was found in a cist formed of four flat stones, with a fifth placed over them for a cover.

Fig. 36.—Urn found at Sheriff-flats (5¾ inches in height).

Fig. 37.—Urn found at Sheriff-flats (5 inches in height).

The fourth urn (Fig. 37) is of the same typical form, but more rudely made. The upper part is encircled by a double moulding underneath the rim, and the exterior surface is rudely scored over with crossing zigzags. It was found in fragments at a depth of 3½ feet from the surface. As now reconstructed, it measures 5 inches in height, and nearly the same in diameter at the mouth.

Fig. 38.—Urn found at Sheriff-flats (6 inches in height).

The fifth urn (Fig. 38) has much resemblance to the fourth, but is thinner and better-made. Its

exterior is perfectly plain, except that it is surrounded by a series of mouldings immediately underneath the brim. It was found at one side of a deposit of burnt bones from 3 to 4 inches in thickness, placed about 2 feet under the surface, and covering an area of about 15 to 18 inches in diameter. It lay partly upon the bones, and was nearly filled with them, though it could not have contained anything like the quantity composing the deposit. It measures 6 inches in height, and nearly the same in diameter at the mouth.

Close beside it, among the heap of bones, lay a small cup-shaped urn 2½ inches high (Fig. 39). This tiny cup-shaped vessel is a characteristic representative of a class of urns which are of comparatively rare occurrence, and are never found alone, but always in association with a larger urn; frequently indeed the smaller vessel has been found deposited within the larger.

Fig. 39.
Small Urn found at Sheriff-flats (2½ inches in height).

For instance, on the glebe at Blairgowrie, in 1878, a large urn, measuring about 12 inches high, and the same in diameter at the mouth, was discovered in the gravel, at a depth of about 2 feet under the surface. The urn had been covered with a large stone, and was broken into fragments, which were not preserved. But among the bones which it contained there was found a tiny cup-shaped urn (Fig. 40), 1¾ inch high, and contracting slightly upwards and downwards from the shoulder.[1]

At Barnfauld, Threepwood, in the parish of Beith, Ayrshire,[2] a small cup-shaped urn (Fig. 41), 2 inches in height

[1] *Proc. Soc. Antiq. Scot.*, vol. xii. p. 624. [2] *Ibid.* 685.

and 2½ inches diameter across the mouth, was found about 1804 within a larger urn, which was not preserved, but is described as having a capacity of about six gallons. This vessel differs from the two that have been already described,

Fig. 40.—Small Urn found within a larger Urn at Blairgowrie (1¾ inch in height).

Fig. 41.—Small Urn found at Barnfauld, Threepwood (2 inches in height).

inasmuch as it presents on one side two small perforations passing completely through the clay, and less than half an inch apart.

Fig. 42.—Urn found in a Cinerary Urn at Wester Bucklyvie (2½ inches in height).

Fig. 43.—Under part of the Urn, highly ornamented.

At Wester Bucklyvie, in Fife, in 1866, a large clay urn was discovered in ploughing. It was about 15 inches in height, narrowing upwards and downwards from the shoulder. It stood inverted over a deposit of burnt bones, among which a very small urn (Figs. 42 and 43) was discovered, 3 inches in diameter, and 2½ inches high. It contained a compacted

mass of ashes and burnt bones of very small size, which were determined from the presence of a milk molar to be those of an infant. The natural inference is that the bones in the larger urn were those of the mother of the child.

At Genoch, in the parish of Straiton, in Ayrshire, a cremation cemetery was discovered, and removed in levelling ground for the foundation of a dwelling-house. A considerable number of urns, "probably about a dozen," were met with and destroyed. They all contained burnt bones and ashes. One small vessel only was preserved (Fig. 44). It presents

Fig. 44.—Small Urn found at Genoch, Ayrshire, and its Cover. (Urn 3 inches in height.)

the peculiarity of being furnished with a lid or cover, also formed of clay. It was found among the burnt bones within a large cinerary urn, and, according to the statement of an eye-witness, "the lid was on it when found." It measures 3 inches in height, 3 inches diameter at the mouth, and 2½ inches at the base, widening to about 5 inches in extreme width at the shoulder. It is pierced by two small holes on one side about 1¾ inch apart. Its lid or cover is a flat circular disc of clay, 3¼ inches diameter, thoroughly burnt, and perforated by a small hole in the centre. The ornamentation of the urn consists of three

groups of encircling parallel lines,—a group of four immediately underneath the rim, a group of six encircling the shoulder, and a group of four immediately above the base.[1]

Fig. 45.—Small Urn found at Craigdhu, North Queensferry (2 inches in height).

In one case, at Craigdhu, near North Queensferry, the smaller urn (Fig. 45) assumes the form of a diminutive copy of the larger cinerary urn. This example was found within a large urn, about 12 inches diameter, enclosed in a cist in the centre of a cairn of considerable size. A fragment only of the larger urn has been preserved. It shows a band of raised zigzag ornamentation underneath the rim, and the surface covered with circular impressions made in the soft clay as if with the end of a twig. The small urn itself (which is here figured of the full size) is but 2 inches high, and the same in diameter at the mouth.

It thus appears that this small variety of cup-shaped urn differs from those larger urns with which it is associated only in respect of the smallness of its size. The form of the larger urn with which it is always found associated is the cinerary form which accompanies burials after cremation. It appears also that in all cases in which the position of the small urn with respect to the larger urn has been ascertained, the smaller vessel is invariably found within the

[1] "Ancient Urns found in the Cairns and Barrows of Ayrshire," by James Macdonald, LL.D.; published in the *Archæological and Historical Collections of the Ayr and Wigtown Archæological Association*, vol. i. p. 43.

larger, and that where the contents of the smaller vessel have been determined they have been found to be the cremated bones of an infant.

Fig. 46.—Small Urns found on Benachie (3 inches diameter).

Their most curious feature is the frequent presence of two or four small holes pierced through one or both sides. Of two examples (Fig. 46) found more than sixty years ago in a cairn on Benachie, in Aberdeenshire, one is 3 inches in diameter at the base where it is widest, tapers upwards to 2 inches diameter at the mouth, and is pierced at the widest

Fig. 47.—Small cup-shaped Clay Urns, from South Ronaldsay, Dunbar, and Old Pendrith.

part by two pairs of small holes on opposite sides; while the other, which is wider than it is high, is 3 inches in diameter

and 2 inches in height, and pierced only by two holes on one side.

Of the three here shown (Fig. 47), the one to the left, which comes from South Ronaldsay, Orkney, is pierced by two pairs of small holes in its opposite sides; the one to the front, which was found near Dunbar, is pierced by one pair of holes in one side only; and the one to the right, which was found at Old Pendrith, in Cumberland, is also pierced by one pair of holes only. They are frequently found in England, and occasionally also in Ireland. One Irish example in the Museum is remarkable for the extraordinary development of this special feature—the piercing of the sides (Fig. 48). It was found at Killucken, county Tyrone, within a large and finely ornamented urn, which measured 14 inches in height, and 10½ inches in diameter across the mouth. The large urn was inverted over a deposit of calcined bones, among which the smaller vessel was discovered. It measures 3 inches in greatest diameter and 2 inches in height.

Fig. 48.—Small Urn found at Killucken, Tyrone, Ireland.

I now proceed to notice other burials, or groups of burials, exhibiting the same characteristic phenomena, accompanied by other varieties of associated objects.

At Dalmore, near Alness in Ross-shire, a group of burials was discovered in making a branch railway in 1878.[1] It consisted of ten interments, in cists of flat stones set in the gravel, and each covered by one or more slabs. Two of them contained implements of bronze. In the first example the cist was only 20 inches under the surface. It was 18 inches

[1] Described by Mr. W. Jolly in *Proc. Soc. Antiq. Scot.*, vol. xiii. p. 256.

long, 9 inches broad, and 12 inches deep. In the bottom was a layer of burnt bones 2 inches thick, among which was

Fig. 49.—Bronze tanged Blade (actual size).

found the bent and broken butt-end of a tanged blade of bronze (Fig. 49), which had apparently passed through the fire. The second grave presented similar phenomena, with

Fig. 50.—Urn found at Dalmore, Alness (13½ inches in height).

this variation, that the implement associated with the burnt bones was a fragment of a slender cylindrical stem or pin of bronze. In several of the other graves, although no bronze

was actually found, its presence was determined by the peculiar greenish tinge of its oxide imparted to the bones with which it had lain in contact. Two of the remaining interments presented special features. One was enclosed in a circular construction of stones, built like a wall, and covered with a flat stone 2 feet 3 inches under the surface. It contained an urn (Fig. 50) inverted on a round flat slab of mica schist about 16 inches diameter and 2½ inches thick. The urn was 12 inches diameter at the rim, 13½ inches high, and 5 inches across the bottom. It is ornamented with slips of moulded clay implanted on the rim, which is perforated by several circular holes about half an inch in diameter. Among the bones covered by the inverted urn there was found an object of bone (Fig. 51), in the form of a small hollow cylinder nearly an inch in length, pierced on one side by two small eyelets nearly close together. Objects of this description have been occasionally found with cremated interments in England, and it has been suggested that they may have been used as dress-fasteners or buttons.

Fig. 51.—Hollow Cylinder of Bone found in the Urn (actual size).

Fig. 52.—Flint Knife (4 inches in length).

One burial of the ten was unburnt. It was at a much greater depth than the others, being 8 feet under the surface. The cist was only 2 feet 6 inches in length by 20 inches in breadth, and con-

sequently the body when placed in it must have been bent nearly double. There had been deposited with it a fine leaf-shaped knife of chipped flint (Fig. 52) 4 inches in length by an inch in breadth, and varying in thickness from $\frac{1}{4}$ to $\frac{1}{8}$ inch; a string of fifty beads, narrow sections of a cylinder, of a jet-like mineral (Fig. 53), and a polished stone wrist-guard (Fig. 54) of the same character as those previously described. It does not differ from them, except that it has one of its ends broken, and subsequently ground smooth. The two holes in the end that remains entire are counter-sunk on one side, as is usual in these objects. In section it is concave

Fig. 53.—Beads of a jet-like substance (actual size).

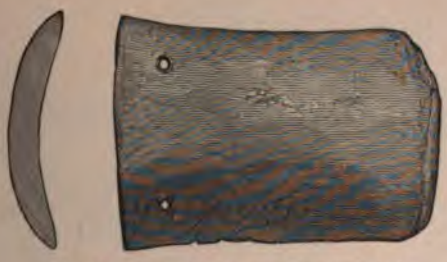


Fig. 54.—Stone Wrist-guard (actual size).

on one side, convex on the other, and measures nearly $1\frac{3}{4}$ inch in length, by $1\frac{1}{4}$ inch in greatest width, and about $\frac{3}{10}$ths of an inch in thickness.

On the farm of Balcalk, in the parish of Tealing, Forfarshire,[1] two cists were found within a short distance of each other in 1880. The first contained only the fragments of an urn, along with an unburnt interment. The second cist measured 3 feet 2 inches in length, by 2 feet wide and

[1] "Notice of a Jet Necklace," etc., by John Sturrock, F.S.A. Scot., in *Proc. Soc. Antiq. Scot.*, vol. xiv. p. 260.

2 feet deep. It contained the remains of an unburnt skeleton. Behind the right shoulder was an urn (Fig. 55), 5½ inches high, 6 inches in its greatest diameter, ornamented with transverse parallel bands of impressions of twisted cord, including between them zigzags of the same character. The urn stood upright, and immediately under it, and in contact with it, were a small triangular flint knife (Fig. 56) and a bronze pin (Fig. 57). In contact with the neck and upper

Figs. 55, 56, 57.—Urn, Flint Knife, and Bronze Pin from the Cist at Balcalk. (Urn 5½ inches in height.)

part of the shoulders were the beads and plates of a necklace of jet or cannel coal (Fig. 58), 147 in number. The surfaces of the plates are decorated with lozenge-shaped patterns of closely set punctulations drilled with a fine point. These patterns have much of the same character as those that are found hatched upon the surfaces of the bronze blades that have been already described. This interment differs from most of the others in being unburnt, and the urn also differs on that account from the large cinerary urns found with burnt interments. Its special feature is the occurrence of the necklace of jet beads and plates; and we

find this special feature associated with the presence of bronze. There are in the Museum portions of a similar necklace of jet beads and plates, consisting of thirteen oblong

Fig. 58.—Necklace of Jet Beads and Plates found in the Cist at Balcalk.

beads and eight plates, three of which are triangular, the rest rhomboidal, found with fragments of an urn of similar character, two beads of amber, and a small fragment of thin bronze, in a cist occupying the centre of a small cairn about

23 feet in diameter on the farm of Blindmill at Rothie, Aberdeenshire. The plates are perforated for three rows of beads to be inserted between them.

At Lunanhead, near Forfar, in 1877, a small cemetery of cists was broken into in excavating a gravel-pit for road-making. In one of the cists, which seemed to have contained an unburnt interment, a necklace of jet beads was found,[1] of which six of the plates and seventy-two beads were recovered, and are now in the Museum. As in the Balcalk necklace, the plates are ornamented with punctulations arranged in lozenge-shaped spaces between borders of punctulations, and are pierced transversely for four, five, and nine rows of beads in the interspaces. In another cist, which also contained an unburnt interment, there was found an urn (Fig. 59) of the same bowl-shaped form, 6 inches in diameter and 5 inches high. With it there was also a broad knife-like flake of flint about 2¼ inches in length, by 1¼ inch in breadth.

Fig. 59.—Urn found in a Cist at Lunanhead (5 inches in height.)

At Tayfield, near Newport, in Fife, in 1870, a necklace of jet beads and plates (Fig. 60), of which eight plates and thirty-nine beads were recovered, was found in a cist 2 feet 10 inches in length, 2 feet 3 inches in width, and about 18 inches in depth, which was discovered in a gravel-pit about 15 inches under the surface, covered over with two rough slabs of stone.[2] There was an urn in the cist, which was

[1] "Notice of two Cists," etc., by William Galloway, in *Proc. Soc. Antiq. Scot.*, vol. xii. p. 288.

[2] *Proc. Soc. Antiq. Scot.*, vol. viii. p. 411.

recovered in fragments. It does not appear on the record whether the interment was burnt or unburnt. The form of the urn would have determined this question, but the fragments were not preserved. The necklace exhibits the same general form as is seen in that found at Balcalk, and the

Fig. 60.—Necklace of Beads and Plates of Jet found at Tayfield.

plates are pierced for seven beads in the central space, and four in the two side-spaces.

Another necklace of this character (Fig. 61), found in a cist at Torish, near Helmsdale, in Sutherlandshire, exhibits the same arrangement of the beads and plates, with similar ornamentation, but differing in the pattern, which in this case consists of triangular instead of lozenge-shaped spaces, alternately plain and punctulated. No trace of bones and no fragments of an accompanying urn were found when the

contents of the cist (which had been thrown out by some boys) were examined some days afterwards by Rev. Dr. Joass, but fragments of charcoal, an arrow-head of chert, and part of a spear-head of yellow flint, were found among the ejected materials.[1] This necklace is figured, as restored, from a drawing by Rev. J. Joass, LL.D., Golspie. The plates marked *a c* and *e* were entire, portions of *b* and *d* only were found, and *f* is restored from its corresponding plate *a*.

Fig. 61.—Necklace of Beads and Plates of Jet found in a Cist at Torish, Sutherlandshire.

In other interments, in which the phenomena are in the main similar to the group of phenomena which we have traced through the whole series of burials that have now been described, we find the presence of personal ornaments of bronze and gold constituting the most striking feature of the deposit. The recorded instances of their occurrence are few, but in such cases the intrinsic value of the objects presents a temptation to their concealment, which does not operate in regard to objects less valuable in themselves.

In making a road at Melfort, Argyllshire, recently, two cists were discovered. Nothing was observed in the one,

[1] *Proc. Soc. Antiq. Scot.*, vol. viii. p. 409.

but in the other there were discovered the beads and plates of a necklace of jet similar to those which have been already described. Along with the necklace of jet, however, there were also two bracelets of bronze, thin and well made, ornamented with parallel lines punched in the outer surface of the metal, and a band of lozenge-shaped ornaments hammered up from the inside. Unfortunately one of the bracelets was broken to pieces, the metal being thin and

Fig. 62.—Bronze Bracelet (one of a pair) found with a Necklace of Jet in a Cist at Melfort (actual size).

brittle from oxidation; but the other (Fig. 62) shows perfectly the form and ornamentation of both.

In making a new road in the neighbourhood of Stobo Castle in 1855, a cremated interment was discovered in what seems to have been a small cairn. There was no urn observed, but the deposit was not carefully examined, and the only things that seem to have attracted attention were the burnt bones which lay under a large boulder, and two bronze rings (one of which is shown in Fig. 63), which lay above it. The rings, which, bent to a circular shape, are well

adapted for being worn on a small wrist, are formed of a bar of bronze flattened on the inside and ovally convex on the outer side, the ends meeting together, but unjoined. The

Fig. 63.—Bronze Bracelet found with a cremated burial at Stobo, Peeblesshire (3¼ inches diameter).

internal diameter of each of the rings is 2½ inches, and the greatest thickness ⅜ inch.

Fig. 64.—Urn found in a Cist in a Cairn in the Parish of Crawford, Lanarkshire (6 inches in height).

In excavating a cairn in the parish of Crawford, Lanarkshire, in 1850, an urn of the tall form (Fig. 64), with thin everted lip and bulging sides, was found, with an unburnt body, in a cist in the centre of the cairn. The urn, which is 6 inches high, and 5¼ inches in diameter, is highly ornamented. With it there was found a bronze ring (Fig. 65) of the same peculiar character as that found with the Stobo interment.[1] The ring measures 2¾ inches diameter, and is

[1] In the account of this interment in the Archæological Association's Journal, vol. xvii. p. 110, a spear-head of bronze is said to have been

apparently formed of a bar of bronze bent to a circular form, and slightly flattened on the inner side; the junction of the

Fig. 65.—Bronze Ring found with the Urn (3 inches in diameter).

ends, however, is imperceptible, and the whole surface is covered with a dense lustrous patina.

Fig. 66.—Urn found with Bronze Rings at Kinneff.

Again, in 1831, in trenching ground near the Castle of Kinneff, in Kincardineshire, a pair of bronze rings, similar in

found with it. It may have been found in the cairn, but its condition and patina are quite different from those of the ring.

form and construction to those that have now been described, were found in association with an unburnt burial, accompanied by an urn (Fig. 66) of the low wide-mouthed form which is usually associated with burials unburnt. The rings (one of which is shown, Fig. 67) are circular, nearly cylindrical

Fig. 67.—Bronze Ring (one of a pair) found with the Urn at Kinneff (3 inches in diameter).

in section, but slightly flattened on the inner circumference, and the ends fit closely together without being joined. As in the previous case, it was said that a bronze spear-head, which was sent to the Museum with them, had been found at the same time and in the same place, but its condition and patina do not correspond with the condition and patina of the rings, and the probability is that it was not associated with the burial deposit.

There is in the Museum a portion of another bronze ring, apparently of the same character, which was found with an urn of the same form, wide-mouthed and thick-lipped, at Ratho, in Midlothian. Some other fragments of bronze, among which is the pin of a fibula of Iron-Age form, are said to have been found with them, but there is no distinct or detailed record of the phenomena observed at the time of

the discovery, and the association may not have been due to the original circumstances of the deposit.

I now proceed to notice a series of burials in which the presence of massive and costly ornaments of gold is the most prominent feature.[1]

Some time before 1828 a very remarkable burial was discovered on the estate of the Earl of Fife, near Duff House, in Banffshire. There are no details of the phenomena of the interment, but the articles found with it have been preserved in the National Museum. They consist of an urn of clay, five penannular rings of solid gold, and two fragments of a thin blade of bronze, apparently of the same character as the thin flat triangular blades described in the first portion of this Lecture. The urn (Fig. 68) is the form which is widest at the mouth and tapering to the base, and it is specially remarkable on this account, that, although found associated with such a deposit of costly objects, it is itself as rude and plain as can well be imagined. Of the gold rings, which are all penannular in form, two are apparently bracelets (one of these is shown in Fig. 69); the other three (Figs. 70, 71, and 72) are much smaller in size. They are all said to have been found in the urn, with the fragments of

Fig. 68.—Urn found with Gold Ornaments in Banffshire (6 inches in height).

[1] For a description of the gold ornaments of the Bronze Age in Scotland that have been found in circumstances of association not necessarily sepulchral, see the third Lecture, pp. 208-224.

the bronze blade, and as the urn was found inverted on a flat stone, the probability is that it covered an interment after cremation.

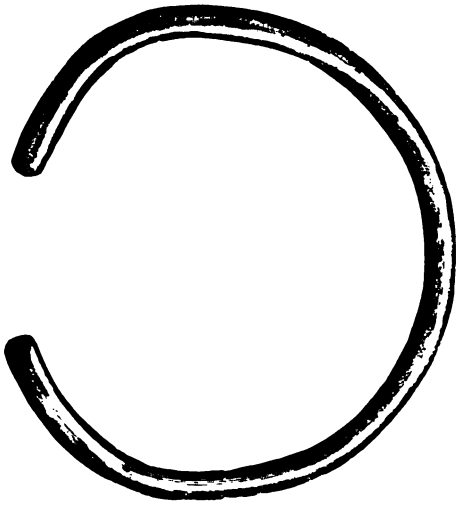
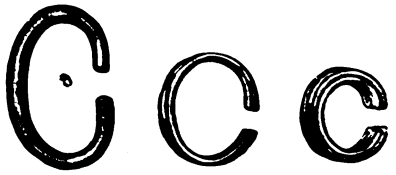


Fig. 69.—Gold Armlet (one of a pair) found in the Urn (Fig. 68) (2¾ inches diameter).

In the month of March 1828, in the course of the construction of a new road to the Academy at Alloa, a cemetery of burials after cremation was discovered, from which no fewer



Figs. 70, 71, 72.—Three small Gold Rings found in the Urn (Fig. 68) (actual size).

than twenty-two urns were obtained. Of these only one (Fig. 73) is now known to exist, and it owes its preservation to its having been sent at the time of its discovery to the National Museum. It is 12¼ inches high and 10 inches diameter at the mouth, with an overhanging rim. There

was one unburnt burial among the group which these operations disclosed. It lay close to two of the burnt burials that were first discovered, and on the flat stone cover of the cist which contained the skeleton were two penannular armlets of gold, together weighing nearly five ounces. One of these is shown of the actual size in Fig. 74.

Fig. 73.—Urn, being one of a group of twenty-two found at Alloa in 1828 (12½ inches in height).

In excavating a mound of considerable size at Upper Dalachie, in Banffshire, in 1794, a cinerary urn was discovered, in which among the burnt bones there was a penannular armlet of gold of the type of the Alloa armlets, 3 inches in diameter, and formed of a solid rod of gold, a little over $\frac{1}{8}$ of an inch in thickness.[1]

At Largiebeg, in the island of Arran, some time previous to 1840, a group of cists was discovered, in one of which

[1] Chalmers's *Caledonia*, vol. i. p. 129.

there was found a penannular armlet of gold, described as being "in the form of the handle of a drawer," which was sold to a jeweller and melted.

In 1731 Sir John Clerk describes a large penannular armlet of gold, with dilated or trumpet-shaped ends, which was found in an urn somewhere in the north of Scotland.

Fig. 74.—Gold Armlet (one of a pair) found with a burial at Alloa (actual size).

In 1838, in reclaiming land on the estate of Sunderland, in the island of Islay, a number of burials were discovered in the vicinity of a large standing stone which had been broken up and removed by blasting with gunpowder. The burials appear to have been of the cisted form, so common in these Bronze Age cemeteries, and containing urns which are not particularly described. In or near one of these cists there were found a penannular armlet of gold with dilated or

trumpet-shaped ends, and another armlet of a form which is of much less common occurrence, formed of "a broad band of gold beaten out so as to form a convex centre, on either side of which was a fluted ornamental border, and a raised rim returned at the edge." This armlet was unfortunately lost; the other, which has been engraved by Dr. Wilson,[1] probably still exists.

Fig. 75.—Gold Ornament found in a Cist at Orton, Morayshire. (Size, 5⅜ inches long, 1½ inch broad at the loop; weight 182 grains.)

At Orton, near Fochabers, in 1863, in the course of the construction of the railway between Elgin and Keith, a stone cist was unearthed on the crown of a gravelly hillock. But little note of the contents was taken by the workmen, who only observed about the centre of the cist "a ridge of black dust," and on either side of that a gold ornament, of the form here shown (Fig. 75) from a drawing by Sir J. Noel Paton, represent-

[1] Wilson's *Prehistoric Annals of Scotland*, vol. i. p. 462.

ing the manner in which it has been considered that such a pair of objects must have been worn. The one here represented is preserved in the National Museum, the other is not known to be now in existence. It measures 5½ inches in length, and is formed of a thin plate of gold, which, if flattened out, would be 1½ inch broad at the centre. It is ornamented along the margin with a row of punched markings bordered by a line on either side. Its weight is 182 grains. Among the gravel taken from the same hillock, and deposited on the line as "ballast," there was subsequently found a diadem or lunette-shaped plate of gold, which it was thought might probably have been associated with the same interment.

Figs. 76 and 77.—Urn and Gold Ornament found at Monikie.
(Urn 5½ inches in height.)

At Monikie in Forfarshire a small cairn beside the Cross of Camuston[1] was opened in 1620, by Commissary Maule, who found underneath the cairn an unburnt burial, accompanied by a rude urn (Fig. 76) of the bowl-shaped form usually associated with such interments, and also a broad flat oval ring of thin gold (Fig. 77) with parallel mouldings in *repoussé* work. The urn is 5½ inches high, and 6 inches diameter at the mouth, narrowing below to a base of 3½

[1] It is manifestly impossible to connect the Cross with the burial thus found in juxtaposition with it. The Cross is of a type which comes close to the twelfth century.

inches. The oval ring of thin gold, which is here shown of the size of the original, is too small for a bracelet, and was probably the mounting of the haft of a blade of bronze similar to that found at Collessie, to which it has considerable resemblance.

At Huntiscarth, in the parish of Harray, Orkney, in 1858, a grave-mound about 30 feet diameter at the base, and 11 or 12 feet high in the centre, was opened by the occupant of the farm on which it is situated. Near the centre of the mound, and about 7 or 8 feet under the surface, a cist was found, about 2½ feet in length by 20 inches in breadth, and covered by a large flat stone. On either side of the cist two upright stones, placed at right angles to the flags forming its sides, rose to within 2 feet of the summit of the mound. In the cist was a deposit of burnt bones, and at one corner on a piece of flat stone lay four discs of thin gold, and a necklace of beads of amber. The gold discs (two of which are shown with the beads in Fig. 78) are about 3 inches diameter, pierced with a circular hole in the centre, and ornamented with a rude pattern of concentric circles and bands of oblique lines or zigzags in *repoussé* work. The amber beads are rudely formed, some globular, but mostly triangular, with one or two fragments of rectangular plates similar to those of the jet necklaces already described, and two curved pendants.[1]

Reviewing the whole results of this portion of the investigation, it becomes evident that we have been dealing with a special class of burials, which are for the most part characterised by the presence among their grave goods of

[1] The arrangement of the beads in the woodcut is of course quite arbitrary. It is by no means certain that all or even the greater portion of the necklace has been recovered. Gold discs of similar character have been occasionally discovered in Ireland, but these are the only examples on record in Scotland. For a description of some of the Irish specimens, see the *Collectanea Antiqua*, vol. iii. p. 221, and Wylde's *Catalogue of Antiquities in the Museum of the Royal Irish Academy.*

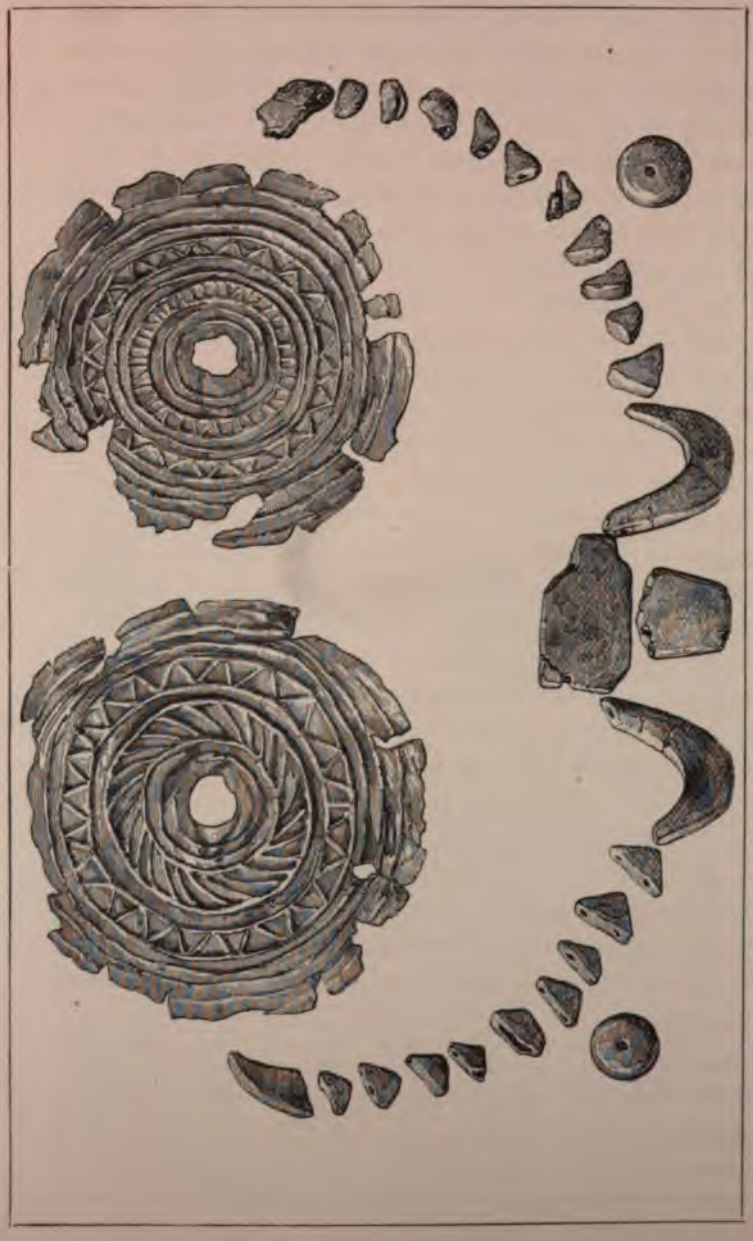


Fig. 78.—Two Gold Discs and part of a Necklace of Amber Beads found in a Cist at Huntiscarth, parish of Orphir, Orkney (Discs 3 inches diameter).

cutting instruments of bronze. We find this characteristic feature associated alike with burnt and with unburnt interments; with burials in cairns, and with burials in natural mounds, or hillocks of gravel and sand; with burials in cists, and with uncisted interments, in which the urn containing the burnt bones, or inverted over them, is simply set in a hole in the ground. But on comparing the varied phenomena of these burials, and groups of burials, it also becomes evident that they present other features, which are equally constant and characteristic. They are usually accompanied by urns, which exhibit peculiar varieties of form and ornamentation. In the typical forms of the accompanying urns we have thus a series of characteristic features of no less importance in the classification of the burials than the associated instruments of bronze. For instance, it is evident that if the thin bronze blade which accompanied any one of the interments with which we have been dealing had been overlooked by the investigators, or had utterly perished, the burial might still have been rightly referred to the Age of Bronze by the character of the urn associated with it, because it would have appeared on comparison that it was of the same typical form as other urns in which or with which bronze has been commonly found. In other words, the special forms of the urns that have been found associated with instruments of bronze are of themselves typical of the Age of Bronze, and their presence alone is sufficient to establish the classification of the interment when bronze is not present.

Again, on comparing the circumstances of the burials that have now been described, it is evident that the urns deposited with them divide themselves by the circumstances of their association into two groups:—(1) those found with burnt burials; and (2) those found with burials unburnt. It is also apparent that they divide themselves by the characteristics of their forms into four typical varieties, of which

two are found associated with burnt burials, and two with burials unburnt:—

First Group.—Cinerary urns, containing or covering the burnt bones and ashes of cremated burials:—

Type 1. Large, coarsely-made urns, wide-mouthed, narrow-based, often with a thick overhanging rim, or with slightly raised mouldings round the sloping part, the ornamentation usually confined to the upper part of the vessel. (See Figs. 79 to 82.)

Type 2. Very small cup-shaped urns, often pierced with two or four small holes in the sides, the exterior surface usually ornamented. When these vessels occur, they are commonly found within the larger variety of cinerary urn. (See Figs. 39 to 48.)

Second Group.—Urns that are not cinerary, associated with unburnt interments.

Type 1. Tall urns, with thin everted lip and bulging sides, highly ornamented. (See Figs. 83 to 95.)

Type 2. Wide-mouthed, thick-lipped, narrow-based urns, highly ornamented. (See Figs. 99 to 107.)

Applying these deductions to the classification of the unclassified burials, of whose casual discovery in almost every parish in Scotland there are more or less precise records, we find that the results correspond, so far as the record goes, with the results that have been already obtained.

For instance, there can be no hesitation in concluding that the accidental discovery of two burials at Birsley, in the parish of Tranent, in 1880, one of which was enclosed in a cist, while the other was a deposit of burnt bones within an urn of the form here represented (Fig. 79), was an indication of the site of a Bronze Age cemetery of the character of those which have been already described. Similarly, although no instruments of bronze were found in association with the six urns of which the fragments were discovered in a sandy

Fig. 79.—Urn found at Birsley, near Prestonpans (14 inches in height).

Fig. 80.—Urn found at Drymmie Wood, Balbirnie (6 inches in height).

hillock at Drynnie Wood, Ballindalloch, in 1879, there can be no reasonable doubt that this also was the site of a Bronze Age cemetery. The typical form of the urns, as represented by the only one of the six which was recovered entire (Fig. 80), is that which usually occurs associated with burials after cremation in cemeteries from which bronze instruments have been obtained. So also it may be inferred, from the form and character of the urn (Fig. 81) found in ploughing a gravelly

Fig. 81.—Urn found at Quarryford, East Lothian (12 inches in height).

mound at Quarryford, East Lothian, in 1883, that a cemetery, similar to that at Magdalen Bridge, must have existed there. This urn so closely resembles the urns of the Magdalen Bridge group (Figs. 29, 30), both in its form and ornamentation, that there cannot be the slightest hesitation in regarding them as examples of the same special variety of a strongly

marked type. The same may be affirmed of an urn (Fig. 82) recently found at Seamill, Ayrshire, in excavating for a new road. It stands 11 inches high, is $8\frac{3}{4}$ inches diameter across the mouth, tapering to $6\frac{1}{4}$ inches across the bottom, the upper part ornamented with two lines of impressed markings on the sloping brim, and the widest part of the vessel marked by a slightly raised and rounded moulding, which forms the upper border to a band of zigzags of two parallel lines, bounded by a similarly raised and slightly rounded moulding below.

Fig. 82.—Urn found at Seamill, West Kilbride, Ayrshire (11 inches in height).

In a sandy hillock at Lesmurdie, in Banffshire, in 1849, five cists were discovered, and the urns from three of the cists (Figs. 83, 84, 85) are preserved in the National Museum. In this case, although no bronze was found, the urns are of a typical form, which has been found associated with bronze when instruments of that metal are present with the interment; and we can therefore have no hesitation in assigning

this cemetery also to the Age of Bronze. In one of the cists some flint chips were found, which appeared to the investigators to be incrusted with oxide of iron; but the fact of the presence of iron was not ascertained by analysis, and this appearance may have been due to the presence of a nodule of pyrites of iron deposited with the flints as a means of striking fire. Strike-lights, consisting of a flake or scraper of flint and a broken nodule of pyrites of iron, have been found deposited with similar interments.[1] In this cemetery at Lesmurdie the burials were all unburnt, and the presence of chips of flint, or even of carefully-fashioned implements of stone (as we have already seen), is not an uncommon feature of Bronze Age interments.

Figs. 83, 84, 85.—Three Urns found in Cists at Lesmurdie, Banffshire (7¾, 5¾, and 7½ inches in height).

The same conclusion may be drawn with reference to a still more remarkable cemetery of this description, which was accidentally discovered at Broomend of Inverurie in 1866. In a large natural mound of sand and gravel, which was cut through in making a road, four cists were found. In two of these no urns were observed. In the third, which measured 5 feet 3 inches in length, about 2 feet 6 inches in width, and nearly the same in depth, two full-grown male skeletons were found, placed with their heads at either end of the cist.

[1] See an instance at Flowerburn, Ross-shire, noticed in Lecture VI. p. 376; and see also Canon Greenwell's *British Barrows*, p. 41, and Evans's *Stone Implements of Great Britain*, p. 284.

Behind the head of each skeleton there was an urn of this special form (Figs. 86, 87). In the cist there were also a few flint chips, a portion of a broken ring, apparently made from the burr of a red-deer horn, and a few fragments of charcoal. Notwithstanding the presence of charcoal, the bodies were unburnt, and the bones were closely covered with a matted growth of rootlets, or more probably the mycelium of some cryptogamous plant. In the fourth cist, which was

Figs. 86, 87.—Urns from a Cist at Broomend, Inverurie (6 inches and 7 inches in height).

covered by a very large and heavy slab, there were also two skeletons,—one of an adult male, and the other apparently of a very young female. The presence of the matted covering closely enveloping the bones was again observed, but in this case its close resemblance to decaying tufts of coarse hair was regarded as evidence of the presence of the hide of an ox, in which the bodies had been wrapped for burial. The adult skeleton lay on its left side, with its head towards the east end of the cist, the knees drawn up to the chin, and the

feet drawn close to the thighs. The arms were bent upwards with the hands to the face. The infant skeleton, similarly contracted, was placed in the north-west corner of the cist. In this instance, as in the previous double interment, there were also two urns in the cist. The smaller of these (Fig. 88) was placed behind the smaller skeleton. It is of the typical form usually found with unburnt burials of the Bronze Age, $5\frac{1}{2}$ inches high, and $3\frac{3}{4}$ inches wide at the mouth, well-shaped, and highly ornamented. The other urn (Fig. 89) is $6\frac{1}{2}$ inches in height. It was placed behind the larger skeleton, and presents the remarkable association of a spoon or ladle of horn, which was found projecting from it in the manner

Fig. 88.—Urn from the same Cist as Fig. 89 ($5\frac{1}{2}$ inches in height).

Fig. 89.—Urn and Spoon of Horn found in a Cist at Broomend of Inverurie.

shown in the engraving. The handle of the spoon is 9 inches in length, and the bowl, which has become twisted and split

with age, is 2½ inches in length, and barely an inch in depth. The excessively bent form of the handle may be due to its position with reference to the rim of the urn.[1]

Again, in the casual discovery of two cists at Slap, near Turriff, Aberdeenshire, in one of which there was found a tall thin urn with everted lip (Fig. 90), we cannot fail to recognise indications of the presence of a Bronze Age cemetery. The urn, which is 6 inches high, though perfectly plain, exhibits the typical form which is characteristic of one special variety of the urns accompanying unburnt interments of the Age of Bronze.

Fig. 90.—Urn found in a Cist at Slap, near Turriff (6 inches in height).

Fig. 91.—Urn found in Court Hill of Dalry, Ayrshire (9½ inches in height).

In clearing away a large earthen mound known as the Court Hill, at Dalry, in Ayrshire, in 1872, a cairn of stones was found underneath it, and in a cavity under the original surface on which the cairn had been reared there were found the fragments of an urn of this typical form (Fig. 91), 9½ inches in height, and highly ornamented.

[1] Accounts of the burials from which these details are taken were communicated to the Society of Antiquaries of Scotland by Mr. J. H. Chalmers and Mr. C. B. Davidson, and printed in their *Proceedings*, vol. vii. pp. 110, 118.

A more rudely made but elaborately ornamented example (Fig. 92), measuring 7 inches in height and 5 inches diameter across the mouth, was found in a cairn at Freefield, Aberdeenshire. The cairn, which was 60 feet in diameter and 15 feet high, yielded nothing else to the explorers, working with a force of five or six labourers for six days.

Fig. 92.—Urn found in a Cairn at Freefield (7 inches in height).

Fig. 93.—Urn found at Drem (8 inches in height).

An example (here figured on a smaller scale as Fig. 93) from Drem, Haddingtonshire, was discovered in 1882, by the ploughshare coming in contact with the covering stone of the cist. The urn, which measures 8 inches in height, and $4\frac{1}{2}$ inches across the mouth, had been placed at the feet of an unburnt skeleton laid on its side in a contracted position.

At Parkhill, in Aberdeenshire, in excavating a gravelly hillock for railway purposes in 1867 and 1881, two burials

were discovered, each accompanied by an urn.[1] The urn from the last discovered interment (Fig. 94) is now in the National Museum. The burial was that of an unburnt body, placed in a contracted posture, within a cist 3 feet 9 inches in length by 2 feet 3 inches in breadth, the bottom of which was paved with small pebbles. Among the human bones in

Fig. 94.—Urn found in a Cist at Parkhill (5½ inches in height).

the cist were fragments of the left fore-limb of a boar, and the bottom of the cist was sprinkled with charcoal. The urn, which is of graceful shape, and elaborately ornamented, is 5½ inches high, and 4½ inches wide at the mouth.

An urn (Fig. 95) of the same typical form, but wider in proportion to its height, and with a more distinctly everted

[1] "Notice of Cists," etc., by Mr. Ferguson of Kinmundy, in *Proc. Soc. Antiq. Scot.*, vol. xiv. p. 69.

lip, was found a few months ago in association with an unburnt interment at Buckie. Its ornamentation is of the same character, and, like the previous specimen, it is here figured of half the actual size, for the purpose of showing the character of the decoration with greater distinctness. It

Fig. 95.—Urn from a Cist at Buckie (7 inches in height).

measures 6 inches diameter across the mouth, and stands 7 inches high.

Another urn of the same typical form, found at Tents Moor, between Leuchars and Tayport, in Fife (Fig. 96), presents a curious peculiarity in its ornamentation, which consists of the impression of a twisted cord of two strands wound spirally round the vessel from bottom to rim. A

triple band of a similar marking surrounds the inside of the rim. The vessel is finely formed and well made, of a close tenacious paste. It stands 5 inches high, and has a diameter of 5 inches at the mouth, which, like others of its class, is slightly everted towards the lip.

Fig. 96.—Urn found at Tents Moor, near Leuchars, Fife (5 inches in height).

At Balmuick, near Comrie, in Perthshire, a group of three small cairns were recently explored by Mr. Boston. In a cist in one of these there was found a very remarkable urn (Fig. 97), presenting the unusual feature of a side-handle. Urns of this variety have been occasionally found in England, but this is the first example that is known to have occurred in Scotland. In its form the body of the vessel somewhat resembles the tall variety with the thin everted lip, but is more akin to the form of the ornate vessel found at Darnhall,

which seems an intermediate form between the tall vessel and the bowl-shaped variety.

At Darnhall, in Peeblesshire, in 1869, a group of cists was discovered in a gravel-pit, from one of which an urn of the peculiar form here shown (Fig. 98) was recovered and sent to the National Museum by Lord Elibank. It is the only one of this special variety which has come under my notice. It is not distinctly stated whether it was associated with an unburnt body, but the form is more allied to that of these tall thin-lipped vessels than to the thick-lipped, shallower, and more bowl-shaped form of those which follow, though they are also associated with unburnt bodies.

Fig. 97.—Urn found in a Cist at Balmuick, near Comrie (5¾ inches in height).

Fig. 98.—Urn found at Darnhall, Peeblesshire (5¼ inches in height).

By the giving way of a retaining-wall in a cutting for the public road, through a sandy hillock known as Kingsbarns Law, near Crail, in 1873, two cists were discovered, in each of which was an unburnt skeleton with an urn. The urns (Figs. 99, 100) were subsequently obtained for the National Museum. They are both of the thick-lipped, wide-mouthed form, almost as wide as they are high, and tapering to a narrow base. Like m

class, they are highly ornamented over the whole of the exterior surface.

Figs. 99, 100.—Urns from Cists at Kingsbarns Law, Crail (6 inches and 5 inches in height).

At Glenhead, near Doune, Perthshire, a mound or cairn covering a number of cists was cleared away some years ago. In one of the cists an urn closely resembling the smaller of the two from Kingsbarns Law was found, and along with it a peculiarly-shaped stone hammer of veined quartzite. The

Fig. 101.—Urn found in a Cairn at Glenhead, near Doune (4½ inches in height).

Fig. 102.—Stone Hammer found with the Urn (2½ inches in length).

urn (Fig. 101) measures 4½ inches in height, and 4 inches in diameter across the mouth, and is highly ornamented over

the whole of its exterior surface. The stone hammer (Fig. 102) is 2⅝ inches in length, and 1¼ inch in diameter, nearly cylindrical in form, with rounded ends. It is beautifully polished, and pierced near the middle by a neatly-bored hole for the haft, with parallel sides, about ⅝ inch in diameter. No bronze was observed in association with these burials, but there was no attempt at a careful investigation. The character of the group of interments differs in no respect from that of many other such groups in connection with which the occurrence of bronze has been recorded. The presence of this finely polished stone hammer-head does not necessitate the attribution of an interment like this to the Age of Stone. Speaking of these perforated axes and hammers of polished stone, Mr. Evans remarks[1] that "many of these appear to belong to a time when bronze was already in use, at all events for knife-daggers," and the form of the urn which accompanied this particular hammer is, as we have seen, a Bronze Age form.

Figs. 103, 104.—Urns found at Murleywell and Ninewells, Forfarshire (4¾ and 4½ inches in height).

At Murleywell, in the parish of Glammis, Forfarshire, in 1852, an urn of similar form (Fig. 103) was found with an unburnt skeleton in a cist of rough slabs. It measures

[1] Evans's *Ancient Stone Implements, etc., of Great Britain*, pp. 49, 163.

4¾ inches in height, by 4½ inches diameter at the mouth, and has the whole exterior surface decorated with impressed markings in parallel bands and groups of zigzags. It also possesses the special feature of four projecting knobs placed at equal distances round the upper part underneath the rim, and pierced laterally by small round holes.

Another urn of similar form (Fig. 104), but without the pierced ears, and less elaborately ornamented, was found in similar circumstances at Ninewells, near Invergowrie in Forfarshire, in 1863. It measures 4½ inches in height, and 4½ inches in diameter across the mouth, tapering to a base of 2½ inches in diameter.

Fig. 105.—Urn from Cist at Stannergate (4½ inches in height).

Fig. 106.—Urn found at Oban (4¾ inches in height).

An urn of more bowl-shaped form (Fig. 105), found in one of a group of cists at the Stannergate, Dundee, is ornamented over the whole exterior surface with bands of impressed markings of a twisted cord alternating with double rows of triangular impressions. All the cists contained unburnt interments, and it is probable that each cist contained an urn, although this was the only one noticed by the workmen. It measures 4½ inches in height and about the same in diameter.

An urn of similar bowl-shaped form (Fig. 106), 4¾ inches

high, and 5 inches diameter at the brim, was found in one of a group of cists discovered in excavating a gravelly hillock at Oban, Argyllshire, in 1876. The figure of it which is here given is drawn to a smaller scale than the others.

Fig. 107.—Urn from a Cist at Kennyshillock (5 inches in height).

A very beautifully ornamented example of bowl-shaped form (Fig. 107) was found in a cist covered by a cairn at Kennyshillock, in the parish of Urquhart, Elginshire, in 1879. It measures 5 inches in height, and 4½ inches diameter across the mouth. The cairn was about 25 feet in diameter, and contained at least one other cist, from which an urn was recovered in 1871.

With regard to the general phenomena of these burials of the Bronze Age, it is apparent, from these descriptions of isolated interments and local cemeteries, that no uniformity exists in what may be termed the external and non-essential features of the burials. But we find that these interments, whether their external manifestations may be those of burial in a cairn, burial in a simple cist set in a gravelly hillock, or burial in an urn unenclosed by any cist, are characterised by the same distinctive feature,—the presence of the blade or

other instrument of bronze. We find also that the urns, the cairns, and the cists, which are thus associated by the common presence of this distinctive feature, are themselves characterised by certain distinctive features which are constant. The urns (as has been shown) exhibit four different varieties of form. The cairns are all unchambered,—that is, they are simple unstructural heaps of stones piled over a central cist, or over a group of cists. The cists, whether in cairns or simply set in the ground in a natural hillock, are of two varieties,—a cist of small capacity, for the ashes of a burial after cremation, and a cist of larger capacity, for a burial unburnt. The longer variety of the Bronze Age cist, however, is rarely, if ever, of full length, like the cisted or stone-lined graves of the Iron Age and the Christian time, and it generally differs from these in its greater width and massiveness of construction. As a rule, its sides, ends, and cover are of single stones, often of great size, usually unshaped, but occasionally marked by sculpturings of very peculiar character, though such instances are really rare. At Coilsfield in Ayrshire, in 1785, a cist was opened, which contained an urn of the wide-mouthed, bowl-shaped form (type 2 of group 2, on p. 70), of which so many examples have been given. The cover of the cist was sculptured on the under side with cups and circles.[1] At Carnwath Moor, in Lanarkshire, in 1870, a small cairn was cleared away, in which a cist was found, containing an urn of the tall narrow form, with bulging sides and thin everted lip (type 1 of group 2, on p. 70). The cover of the cist, which is an unshaped slab of sandstone, 4 feet long by 3 feet in width, and 6 inches in thickness, is sculptured on its under side as shown in Fig. 108. At Kilmartin, in Argyllshire, in 1870, a cist, in the

[1] This stone is figured from a drawing communicated to the Royal Society in Dr. Wilson's *Prehistoric Annals of Scotland*, vol. i. p. 480; and Simpson's *Archaic Sculpturings*, p. 30, Pl. xiii.

construction of which two sculptured stones had been used, was found in the remains of a partially ruined cairn. The cist, which was 6 feet in length inside, was formed of large stones placed in the manner shown in the ground-plan (No. 1 of Fig. 109), and covered with a massive slab. The covering slab was unsculptured, but the stones marked B and A respectively were sculptured as shown in the diagram. The slab B (No. 2

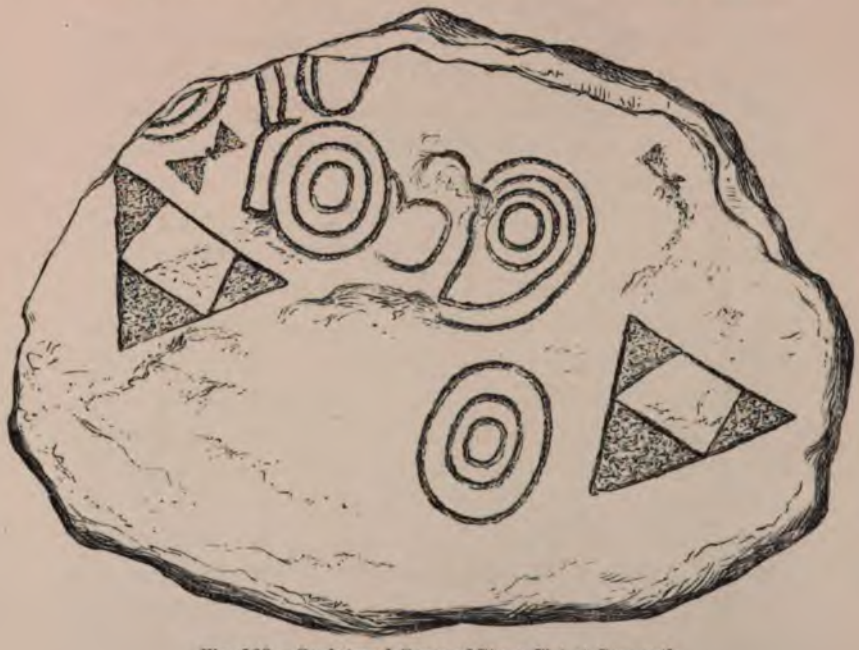


Fig. 108.—Sculptured Cover of Stone Cist at Carnwath (4 feet 3 inches in length).

of Fig. 109) is marked with a long groove, picked with a sharp-pointed instrument, and having shorter grooves at right angles to it. The slab A (No. 3 of Fig. 109) has the representation of a flat axe-head, of the typical form of the earliest axe-heads of bronze, eight times repeated. These sculpturings are shallower than seems requisite for use as moulds for casting these implements, although Mr. Evans has re-

marked that it is not impossible that they might have been so used.[1] But whether their presence may imply that this

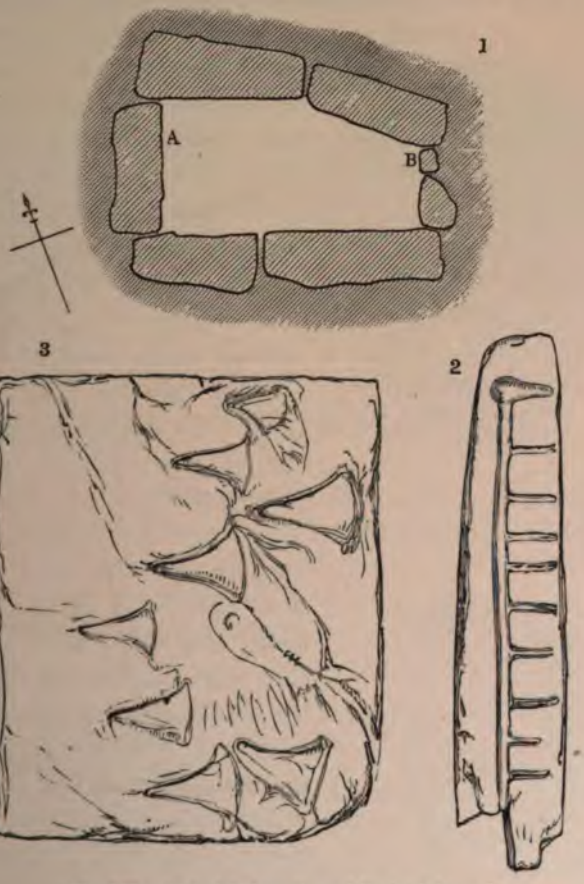


Fig. 109.—Cist at Kilmartin and its Sculptures.
1. Ground-plan of Cist (6 feet long inside). 2. Incised Face of Upright Stone B.
3. Front View of Stone A, showing incised Sculpturings of Axe-heads.

is the grave of a Bronze Age founder, and these are his moulds, or whether they are merely symbolic representations,

[1] *Ancient Bronze Implements, etc., of Great Britain*, by John Evans, D.C.L., etc., p. 430.

the inference is unavoidable that they belong to the Age of Bronze.

Again, with regard to the burial customs, it is also apparent from the descriptions of these local cemeteries, that we have no evidence sufficient to separate the custom of cremation from the custom of burying the body unburnt. We have frequently found the burnt interments and the interments unburnt in close juxtaposition in the same group of burials, and in point of fact the two modes of burial are occasionally present in the same cairn. For instance, in a cairn on the glebe of Eddertoun, in Ross-shire, which was explored by Rev. Dr. Joass,[1] a group of six cists was found. The cairn was a small one, about 24 feet in diameter, and 5 feet high, and the cists were disposed as shown in the accompanying ground-plan (Fig. 110). The cists marked with the numbers 2, 5, and 6 on the ground-plan contained burnt bones, while that marked with the number 3 contained an unburnt skeleton and the urn here shown in Fig. 111, about 6 inches high, and 5 inches diameter at the mouth. It is of the tall variety, with thin everted lip and bulging sides, usually associated with unburnt interments.

Fig. 110.—Ground-plan of Cairn on the Glebe at Eddertoun.

Fig. 111.—Urn found in one of the Cists.

[1] *Proc. Soc. Antiq. Scot.*, vol. vii. p. 268.

At Tealing, in Forfarshire, in 1870, in a gravelly hillock at the base of Tealing Hill, three interments were found. At a depth of 8 feet from the surface there was a cist, containing an unburnt skeleton laid on its left side, with the head to the east; and about 3 feet above the cover of the

Figs. 112, 113.—Urns found overlying a Cist at Tealing.

cist were two cinerary urns (Figs. 112, 113) filled with burnt bones. One was inverted over the bones, the position of the other was not ascertained. Both were simply set in the gravel, at a depth of about 3 feet under the surface, and slightly protected by a setting of small stones.[1] They are

[1] The circumstances of these burials were communicated at the time to the Rev. Canon Greenwell of Durham, whose extensive experience entitles him to speak with authority on this question. He says:—"This discovery is similar to many that have come under my own observation, —an unburnt body with one or more burnt bodies overlying it. Were the two burials, the burnt and the unburnt, contemporaneous? I am inclined to think they were, and I have found so many cases where a burnt and an unburnt body have been laid in the grave most unquestionably at the same time, as to make such a proceeding by no means an unusual one. It is difficult to say why one was burnt, while the other was interred without having undergone the process of cremation. I have thought we have in the burnt bodies those of wives or slaves killed at the time of the funeral of the man; still that is mere conjecture, and men are found burnt and laid alongside of unburnt women, if we may judge of the sex by the accompanying implements or weapons, which seems a fair deduction; but I am certain that inhumation and cremation were practised,

of the large, wide-mouthed variety, ornamented only on the upper part, which is invariably associated with burials after cremation.

Fig. 114.—Urn from a Cairn at Stenton (14½ inches in height).

In a cairn at Stenton, in East Lothian, which was removed in 1877,[1] two interments were discovered, one of which was burnt, and the other unburnt. The cairn was a large one, having its base defined by a circle of boulders measuring 40 feet in diameter. Near the centre of the cairn was a small square cist containing the urn here figured (Fig. 114), 14½ inches high, and 12½ inches diameter at the mouth. It

not only at the same time, but for interments made on the same day. It is probable that this case at Tealing was a similar one, and that the two overlying burnt bodies were laid there at the same time as the unburnt body. The burials were no doubt of the native population, and in all likelihood pre-Roman."—*Proc. Soc. Antiq. Scot.*, vol. viii. p. 382.

[1] Described by Rev. George Marjoribanks in *Proc. Soc. Antiq. Scot.*, vol. xvi. p. 220.

had been placed in the cist in an inverted position over a deposit of burnt bones. Near this cist was another, 4½ feet in length, by 2½ feet in breadth, containing the remains of an unburnt skeleton, and with it a finely chipped knife of flint (Fig. 115), formed of a triangular flake 3 inches in length, and a whetstone of micaceous schist (Fig. 116), of quadrangular form, with a hole partially bored at one end. Whetstones of this form are only found in graves of the Bronze Age. No urn was found with this interment.

Figs. 115, 116.—Flint Knife and small Whetstone, found with an unburnt Burial at Stenton (each 3 inches in length).

In the whole of these burials and groups of burials, when taken collectively, there is presented to us a series of phenomena which differ widely from the phenomena of the Iron Age burials described in the last course of Lectures. They so far resemble the Iron Age burials, inasmuch as they are of Pagan character, accompanied by deposits of grave goods; but these deposits are widely different in character from those

accompanying the burials of the Iron Age. The Iron Age deposits abound in tools and weapons of iron, but they contain no cutting implements of bronze. The deposits with which we are now dealing are totally destitute of iron, and the only cutting instruments of metal which they contain are made of bronze. The presence of personal ornaments of silver was also a special feature of the sepulchral deposits of the Iron Age; but the absence of silver is a feature of the deposits we have now surveyed which is quite as characteristic as the absence of iron, while the presence of personal ornaments of gold, of massive and peculiar forms, is equally notable. Not less notable is the change in the character of the ornamentation of all the objects that exhibit surface decoration. When attention is directed to the prevailing characteristics of that decoration, it becomes apparent that it presents nothing in common with the system of ornament with which we had become familiar in our investigation of the Iron Age deposits. The ornament we now meet with consists almost entirely of combinations of straight lines, disposed in parallel groups or zigzags, or triangular or lozenge-shaped spaces. Occasionally a segmental curve, or a concentric circle, appears, but the prevailing character of the decoration is as clearly a system of straight lines as that of the Iron Age was a system of curved lines. By these indications we perceive that we have passed from a system of decoration in curvilinear forms to a system of decoration in rectilinear forms, and from a phase of culture familiar with the use of iron and silver to a phase of culture familiar with the use of bronze and gold. The bronze is present in these deposits in the same character in which iron was present in the deposits of the Iron Age—as the only metal used for cutting instruments. We find it associated both with burnt and unburnt burials, with urns of clay of special forms and peculiar ornamentation, with

personal ornaments of gold, amber, and jet, with implements of polished stone and roughly chipped arrow-heads and knives of flint. We find the typical burials, of which these associated objects are characteristic, extending over the whole of the mainland of Scotland, and into many of its outlying isles. But we do not find—at least I have been unable to discover—any obvious or noticeable distinction between the forms or the workmanship of the different examples of the same classes of objects found in widely separated portions of the country. The urns from Ross-shire and Mull are as well made and as highly decorated as those from Midlothian. The bronze blades and jet necklaces from Sutherlandshire are precisely like those from Forfarshire and Midlothian. The gold ornaments from Banffshire are similar to those from the southern districts of Scotland. There may be among the various examples some that are finer and some that are ruder than others, but taking them collectively, it is evident that the objects fashioned in these various materials usually exhibit shapeliness of form, fitness of purpose, and tastefulness of decoration. These thin triangular blades of bronze are as beautifully cast and finished as any modern founder could wish. They were neatly fitted to their handles, and solidly fastened by rivets. The handles themselves were occasionally decorated with mountings of gold ornamented in *repoussé* work. The smaller blades of oval outline are even more skilfully made and more delicately finished and decorated. The urns with which they are associated exhibit a wonderful variety of graceful forms and appropriately simple but effective ornamentation. They are not wheel-made, but many of them are nearly as regular and symmetrical in their outlines as if they had been thrown on a potter's wheel. With these finely ornamented vessels there are associated armlets, earrings, and diadems of gold, bracelets of bronze, necklaces of jet, and beads of amber.

The gold ornaments are massive and well made, and their forms, though peculiar, are neither rude nor devoid of elegance. The necklaces of beads and plates of jet are elaborately constructed and carefully ornamented with punctulated patterns, which contrast fitly with the polished surface of the material. Thus there is taste exhibited in the forms of all these variously fabricated objects, and dexterity and skill implied in their finish and workmanship. Intrinsically, they are evidences of the capacity and skill of the men who made them. But, as we find them all in associations which show that they are grave-goods—devoted to the dead, —we see that they are also evidences of the piety and affection which thus expressed themselves in the manner of the time.

LECTURE II.

CIRCLES, AND SETTINGS OF STANDING STONES.

IN my last Lecture I have dealt with a series of burials selected on account of their essential phenomena, these being the phenomena which are presented by the deposit itself, inclusive of the manner of burial, and all its underground accompaniments. In the present Lecture I shall deal with a series of burials selected by their overground phenomena, with the view of determining whether they exhibit the same essential or underground phenomena which are characteristic of the previously described series. The burials now to be dealt with are those which are distinguished externally by overground erections or stone-settings, such as are known in this country by the names of Stone Circles, or groups of Standing Stones.

On Mauchrie Moor, in the townland of Tormore, in the island of Arran, a remarkable group of interments was investigated in 1860 by the late Dr. Archibald Bryce. The most characteristic of this group was an interment in a carefully constructed cist, 3 feet in length, 1 foot 4 inches in breadth, and 2 feet deep, covered over by a very large stone at a depth of 3 feet 4 inches under the surface. The cist was placed in the centre of a circle of about 21 feet in diameter, on the circumference of which stood four blocks of granite

about 3 feet high, and nearly equidistant from each other. In the cist lay an urn on its side among some fragments of bone, whether burnt or unburnt is not specified. The urn (Fig. 117) is a wide-mouthed vessel, tapering in the lower part, and contracting in stages towards the brim. Its whole surface is ornamented in bands of oblique lines and impressed markings, the bands being separated from each

Fig. 117.—Urn from a Stone Circle at Tormore, Arran (7½ inches in height).

other by single, double, or triple lines, scored with a point. Among the bones on the floor of the cist were a few flint chips, and a fragment of a bronze awl or pin, greatly corroded. This burial in its underground phenomena, which constitute its essential features, differs in no respect from the typical character of the burials described in the last Lecture. But it presents this special distinction, that it differs from them in its overground features, inasmuch as it is placed within a

construction which is not a cairn or a mound, but a setting of standing stones, on the circumference of a circle enclosing a considerable area.

Other interments presenting similar features were found in the immediate vicinity. One of these burials, enclosed in a cist a little over 3 feet in length, 22 inches broad, and 26 inches deep, was accompanied by an urn (Fig. 118) of similar form and ornamentation to that last described, and a few chips of flint. No bones were noticed. The inference

Fig. 118.—Urn from a Stone Circle at Tormore, Arran (6½ inches in height).

from this is that the deposit was unburnt, for there is nothing more indestructible than burnt bone. The cist was placed in the centre of a circle 15 yards in diameter, around the circumference of which there had been set at intervals seven tall pillars or narrow slabs of sandstone. Of these, three were still standing, two had fallen, and the others had been removed. The tallest of those left standing was about 18 feet in height, 3½ feet in breadth, and 22 inches in thickness; the second was 15 feet high, 3 feet broad, and 14 inches

thick; and the third 12 feet high, 4 feet broad, and 11 inches thick. This burial differs from the first, inasmuch as it presents no bronze. But every other feature is essentially the same, and we only know that no bronze was detected in it. Such a small pin-like fragment as that which gave a distinctive character to the first interment may have been present without being detected. Indeed, the little fragment found in the first instance, although detected and preserved by the explorers, was not known to be of bronze until the objects found with the burials had been forwarded to the Museum, and nothing was apparently further from their minds than that such things as minute portions of pins or awls of bronze were to be looked for in such interments. But the absence of the evidence of bronze in this interment does not affect the obvious conclusion from the concurrent similarity of all the other features in both. They are interments with urns of similar character, similar in their ornamentation, and placed in cists, in the centre of an enclosed circular space defined on the surface by a circular stone-setting or circle of standing stones.

An interment with a similar urn and a few chips of flint was found in a cist placed in the centre of another circle of standing stones at no great distance from the last-mentioned example. In this case, the circle had been about 13 yards in diameter, and had five stones remaining in its circumference, four of which were prostrate. The stone still remaining erect was about 14 feet in height. A second interment, unburnt, was found in a cist placed at a distance of 3 feet from the central cist. Here again we have a repetition of the same features, but with this difference, that there is more than one interment within the space enclosed by the circular boundary of erect pillar-stones.

In all these burials the phenomena are of the same essential character as those of the burials described in the

last Lecture. They are burials associated with implements of bronze, or with urns decorated with that peculiar ornamentation of straight and zigzag lines, which we have learned to recognise as characteristic of the Age of Bronze. They differ from those previously described in one respect only,—they are marked above ground by the presence of a stone-setting of peculiar character, which takes the form of a ring of standing stones encompassing the area in which the interments have been made.

I now proceed to describe a further series of interments in which this overground characteristic is specially conspicuous. For our knowledge of their phenomena we are indebted to a series of investigations made by Mr. Charles Elphinstone Dalrymple, F.S.A. Scot., which constitute one of the most important contributions to the materials of Scottish archæology that has ever been made.[1]

At Tuack, near Kintore, in Aberdeenshire, Mr. Dalrymple found a group of seven interments within the area enclosed by a circle of six upright pillar-stones, the ground-plan of which is shown in Fig. 119. Four of these burials were deposits of incinerated bones, placed in small round pits from 18 inches to 2 feet in depth; and three were also deposits of incinerated bones, but placed in pits of somewhat larger dimensions, and covered by inverted urns. The four first-mentioned burials were arranged round the central space of the circle, at nearly equal distances from the centre, and from each other; the three last-mentioned burials were near the two northern stones of the circle, their positions being shown on the ground-plan by small dotted circles. The deposit nearest the eastmost stone was covered by an inverted urn

[1] The results of these investigations are briefly summarised in the first volume of Dr. John Stuart's *Sculptured Stones of Scotland*, issued by the Spalding Club in 1856. As this work is now both rare and costly, they are not so well known to archæologists as they deserve to be.

(Fig. 120) 12 inches high, 10 inches wide at the mouth, widening to 11 inches at the shoulder, and tapering thence to a base of 5 inches diameter. Its ornamentation is a simple band of intercrossing zigzags, forming lozenge-shaped spaces by intersection. The ornament is confined to the sloping upper part of the vessel next the rim, and below it two raised and slightly rounded mouldings encircle the urn in a direction parallel to the rim. These features are absolutely identical

Fig. 119.—Diagrammatic Ground-plan of Stone Circle at Tuack (24 feet diameter).

with the features so frequently remarked in the larger variety of the cinerary urns found in the cists and cemeteries described in the last Lecture; and this interment presents another feature, apart from the form of the urn and the character of its ornamentation, which is also identical with the most characteristic of all the features of these cisted burials. Among the incinerated bones protected by the urn there was found a small fragment of thin bronze, greatly corroded, a portion doubtless of one of the thin bronze blades which are the characteristic accompaniments of so many interments of the Age of Bronze. The other deposits presented features

equally characteristic. Close by the stone which stood to the west of the north point in the circumference of the circle, two interments were found, also of incinerated bones covered by inverted urns. One of these urns was 13 inches high, 11 inches wide at the mouth, widening to 13 inches at the shoulder, and tapering thence to a base of 9 inches diameter. Among the incinerated bones which it covered there were found two small fragments of thin bronze, brittle and con-

Fig. 120.—Urn found in the Stone Circle of Tuack (12 inches in height).

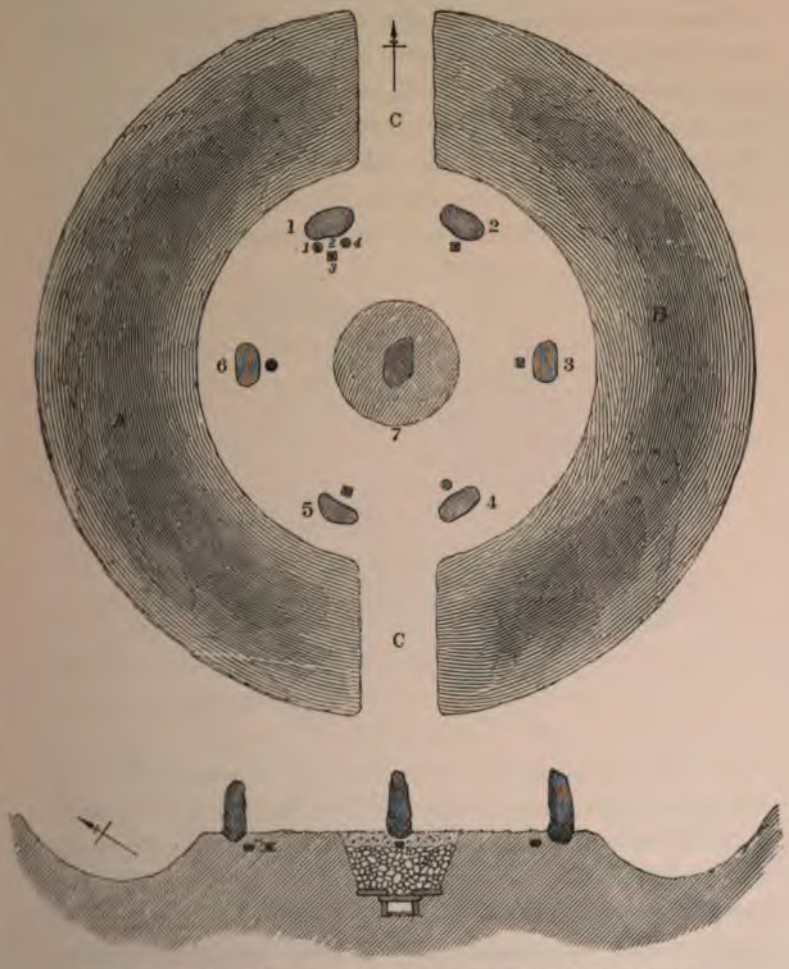
torted, having apparently passed through the fire. They have every appearance of the wasted fragments of the thin bronze blade which is so commonly the characteristic accompaniment of Bronze Age burials. The urn covering the contiguous deposit was larger in size, but of the same typical character, and presenting a variety of form which has become familiar to us from its frequent occurrence in the cists and cemeteries of the last Lecture. It has a broad overhanging brim, below which is a kind of neck and shoulder, from which it slopes regularly to the bottom. It measured 14¾

inches high, 11 inches in diameter across the mouth, and 14 inches across the shoulder, contracting to 5 inches diameter at the base.

In this group of burials the same essential features are again present. The interments are burnt, and associated with cinerary urns of the same typical form and ornamentation, and with the same characteristic thin flat blade of bronze. There are no cists, but as we have previously found in cremation burials, a large urn is inverted over the deposit of incinerated bones. The burials are placed in an enclosure marked off from the surrounding area by a circular stone-setting, or circle of standing stones. But this place of interment has an addition to its overground phenomena which we have not previously met with. Its area is not only marked by the circular stone-setting, but it is further cut off from the common soil around it by a trench of 12 feet wide (not shown in the ground-plan), encompassing its circumference, and giving a sense of complete isolation to the circle of stones with its included grave-ground.

At Crichie, also in the Kintore district, another series of interments was found within a circular space cut off from the surrounding area by a trench A B of Fig. 121, which differed from that at Tuack, inasmuch as it was not carried completely round the included area, but was interrupted at two points (C C) by accesses on the unexcavated level of the north and south sides. The trench was 20 feet wide, and 6 feet deep, and the accesses connecting the included area with the adjoining surface were 9 feet wide. On the circumference of the circular area, within the trench (as shown in Fig. 121), there had been a circle of six standing stones, with a seventh in the centre, but five had been removed for building purposes before the time of Mr. Dalrymple's investigation. In the centre of the circular area he found under the apparent surface a cairn of stones,

15 feet in diameter, and about 5 feet high (see Fig. 122). Its base was formed of flat slabs, the inner edges of which



Figs. 121 and 122.—Ground-plan and Section of Stone Circle at Crichie, Aberdeenshire. (Scale 25 feet to an inch.)

overlapped those of a very large slab in the centre. This slab was the cover of a cist, about 4 feet long by 2 feet

10 inches wide. The cist contained the remains of an unburnt skeleton, and (it is also said) some calcined bones, but nothing else was found in it. Near one of the stones of the circle on the north side of the area (No. 2 on the ground-plan) an inverted urn was found set in a small pit excavated in the subsoil, and covering a deposit of calcined bones, "partly human, and partly of some animal." The urn is about 12 inches high, $7\frac{5}{8}$ inches diameter at the mouth, widening to $10\frac{3}{4}$ inches at the shoulder, and tapering thence to a diameter of 6 inches at the base. The

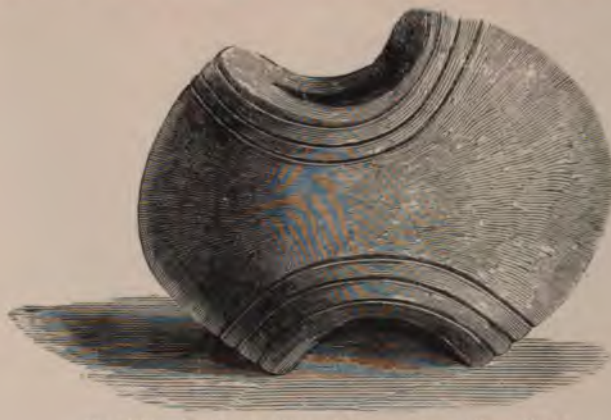


Fig. 123.—Perforated Stone Hammer, from Stone Circle, Crichie ($4\frac{1}{2}$ inches in length).

part between the shoulder and the brim is ornamented with diagonal lines impressed in the clay, the lower part plain. At the base of another stone (No. 1 in the plan) there was also a deposit of incinerated bones, whether protected by an urn or not is uncertain. Close by it, and also in front of the base of the standing stone, was another deposit of calcined bones, and between the two deposits there was found the finely made head of a war-axe or hammer of stone (of the form shown in Fig. 123). It is of greenstone, $4\frac{1}{2}$ inches in length, and $3\frac{1}{2}$ inches in greatest breadth, oval in

its outlines, but deeply hollowed on the two sides at the orifices of the perforation for the handle, so as to give gracefulness to the shape, and at the same time to lessen the extent of the perforation. These hollows are bordered by a group of three incised lines, which follow the curvature of the hollow in the sides of the implement. Several other deposits were found at different parts of the area, chiefly in the vicinity of the bases of the pillar-stones which had been removed. One of these deposits was enclosed in a small cist, others were merely deposited in the earth, but one was contained within an urn of elegant shape, 9½ inches high, 7½ inches in greatest width, and narrowing to 3½ inches diameter at the base (Fig. 124). It has a thick overhanging rim, a deep short neck formed by an inward curve, from which it curves quickly out to the shoulder, and thence tapers in a long slope to the bottom. The neck and the part of the vessel immediately under the shoulder are ornamented by impressed lines forming a series of double zigzags crossing each other in the centre.

Fig. 124.—Urn from Stone Circle, Crichie (9½ inches in height).

In this group of interments we have again a repetition of phenomena which are for the most part of similar character to those that have been previously described. The burials are mostly after cremation, but occasionally unburnt. They are placed sometimes in cists, sometimes in urns, and occasionally in pits in the subsoil. These are all features with which we have become familiar as characteristic of Bronze

Age interments. The burying-ground is a circular space, cut off from the surrounding area by a trench, with a mound of earth on the outside of the excavation. The space thus enclosed is also encompassed by tall pillar-stones set up at intervals round its circumference. The urns associated with the burials are of the same forms, and decorated with the same ornamentation, as those found in other circumstances associated with fragments or blades of bronze. Here there is no evidence of the presence of bronze itself, but the perforated stone battle-axe is a typical form of stone implement assignable to the Age of Bronze, because it has been often found associated with implements of bronze in other deposits of a sepulchral character.

At Fullarton, also in the neighbourhood of Kintore, Mr. Dalrymple found seven deposits of incinerated bones, some of which were accompanied by fragments of urns, and also an unburnt burial, within the area of a circle of which only three stones remained, two of which were prostrate and broken. The circle had been about 28 feet in diameter, and probably consisted of six or seven stones. In other districts of Aberdeenshire he found similar deposits, in a series of circles of much larger size and more massive construction. They are distinguished from those that have been described by the presence, in the circular stone-setting, of one stone greater than any of the others, which is never erect, but lies on edge between the two pillar-stones that stand to the west of the south point in the circumference of the circle.

We thus proceed to consider a series of burials found within such circles as have one of the spaces between two of the standing stones filled by a great recumbent stone or slab, usually placed on its edge, and situated commonly to the west of the south point of the circle.

At Rayne, in Aberdeenshire, in a circle of about 60 feet

diameter, which had consisted apparently of twelve stones—the pillar-stones from 5 to 6 feet in height, and the recumbent stone a great flat slab 12 feet in length, 7 feet in breadth, and 1½ to 2 feet in thickness—there was found in the central portion of the area a mass of stones, with a circular hollow or pit in the centre containing a deposit of incinerated bones, among which were some fragments of urns and the half of a broken wrist-guard of polished stone (similar to that figured at p. 15, as found in the urn at Fyrish), having one end perforated by three small holes. This implement, as has been shown, is also of a type which is frequently associated with implements of bronze, although no bronze was found with it here.

At Sunhoney, in the parish of Midmar, deposits of incinerated bones were found throughout a space of 8 feet diameter in the central part of the area enclosed within a circle of 12 stones. Of these stones eleven are upright pillars of red granite, from 5 to 7 feet in height, while the twelfth is a stone recumbent on its edge, filling the space between the two pillars that are immediately to the west of the south point in the circumference of the circle. This recumbent stone is 16 feet in length, 4½ feet in breadth, and 3 feet in thickness, weighing about 18 tons.

At Ardoyne, in the parish of Oyne, a deposit of incinerated bones, accompanied with fragments of urns, was found in the centre of a circle, 81 feet in diameter, which had apparently consisted of twelve stones, of which one was recumbent, placed, as in the former instances, on the south-west side of the circle. The recumbent stone measures 8 feet in length, 5½ feet in breadth, and about 15 inches in thickness. One of its adjoining uprights is gone; the one remaining is 9 feet high, 2 feet broad, and 2 feet thick.

At Ardlair, in the parish of Kennethmont, a deposit of

incinerated bones was found within the area of a circle about 35 feet diameter (Fig. 125), which appears to have originally consisted of ten stones. The circle stands on the summit of a round low hill on the estate of Leith Hall. The upright stones are not remarkable for size, ranging from 4 to 5 feet in height, but the recumbent stone is more massive, measuring 9 feet long, 3½ feet broad, and 2 feet thick. There

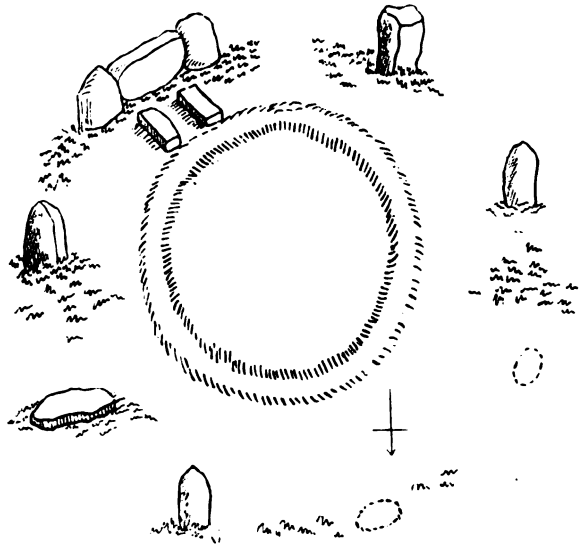


Fig. 125.—Diagrammatic Ground-plan of the Stone Circle at Ardlair. From Sketch by C. E. Dalrymple. (35 feet in diameter.)

seems to have been an interior circle not quite concentric with the exterior stone-setting. The deposit was found within the interior circle and near its southern side. It had been placed in a pit about 4 feet in diameter and little more than 2 feet deep, and covered with two flat stones.

At Castle Fraser several deposits of incinerated bones, accompanied by fragments of urns, were found within the area of a circle about 65 feet diameter, which had consisted

of eleven stones, of which ten were upright pillars, and one a great slab 6 feet 9 inches in length, and 6 feet in breadth, filling the space between two of the uprights on the south-west side of the circle. The largest of the standing stones measured 11 feet 9 inches in height, and 4 feet 9 inches in breadth. In this case, as at Ardlair, there was an interior circle, 13 feet in diameter, well defined by flat stones set in the ground close to each other, and showing themselves above the turf. The whole area of the principal circle, as well as that of the interior circle, was closely paved with small boulders, lying about 6 inches underneath the surface.

From these examples it is clear that whatever may be the variation in the constructive character of the stone-setting, or in the general nature of the overground phenomena of these interments, the essential or underground phenomena are found to be constant in all their typical features: the burials are sometimes burnt, and sometimes unburnt, and they are associated with urns and other objects that are characteristic of the Age of Bronze.

The results of the investigations which in a few other cases have been conducted by other explorers are in the main similar.

At Glenballoch, near Blairgowrie, in Perthshire, there is a circle of four stones embracing an area of about 18 feet diameter.[1] The largest stone is 7 feet long by 6 feet broad, and 3 feet 3 inches high; the smallest is 5 feet long by 4 feet 9 inches broad, and 2 feet high. They are not tall pillar-stones set erect on their ends, but oblong boulders laid on their broadest sides. Within the circle, a large urn (Fig. 126) containing a deposit of calcined bones was found some years ago by Mr. Harris, the farmer, and has been since

[1] Described by Mr. J. Romilly Allen in *Proc. Soc. Antiq. Scot.*, vol. xiv. p. 90.

placed in the National Museum. It measures 15½ inches in height, 12 inches diameter over the brim, widening to a diameter of 14 inches at the shoulder, from which it tapers to a base of 6 inches diameter. It is ornamented both outside and inside the rim by bands of impressed lines meeting each other obliquely so as to form what is known as the

Fig. 126.—Urn found in a Stone Circle at Glenballoch (15½ inches in height).

herring-bone pattern. Below the overhanging rim there is a wide band of boldly moulded ornament of zigzags, in which it will be seen that the operator has failed to divide the space properly in setting out his pattern. But with the exception of this slight defect, the workmanship and decora-

tion of this large and handsomely formed vessel is excellent, and, as Mr. Romilly Allen has well remarked, "will compare favourably with those of any other production of ceramic art, ancient or modern."

At Tynrich, Ballinluig, near the junction of the Tummel with the Tay, in 1855, when a piece of ground was being prepared for a garden, a circle of 25 feet diameter, composed of six great stones, varying from $6\frac{1}{2}$ to $3\frac{1}{2}$ feet high, and set at nearly equal distances from each other, was trenched over. Within the area of the circle four different burials of burnt bones were found, deposited in large cinerary urns, each of which was about 2 feet high, and over 12 inches in diameter at the mouth. The urns were all destroyed.[1]

At Badentoy, in the parish of Banchory-Devenick, in Kincardineshire, Mr. Alexander Thomson found remains of a deposit of calcined bones and charcoal in the centre of a circle of standing stones, which had been excavated at least once before, and the contents disturbed, but the nature of the deposit was unmistakable. The circle had consisted of seven stones, of which four had been broken up for building purposes. Of the three that remained, the largest was 9 feet high, 3 feet 3 inches broad, and 2 feet thick; and the smallest 4 feet high, 3 feet broad, and 15 inches thick.

At Kingcausie, half a mile west from Badentoy, five deposits of incinerated bones, mingled with fragments of urns and charcoal, were found within the area of a circle consisting of thirteen stones. The stones forming this circle were smaller than usual, none of them being over 3 feet high. The circle (Fig. 127) is about 78 feet in diameter, and contains two smaller concentric circles of flat stones placed on edge close to each other, the second circle being 12 feet within the circumference of the outer circle, and the

[1] Quotation from *Perthshire Advertiser*, and letter from Rev. Mr. Macmillan, Dunkeld, in the *Kilkenny Journal*, vol. iii. p. 313.

third enclosing a space of 9 feet diameter in the centre. The deposits were found within the area of the central circle.

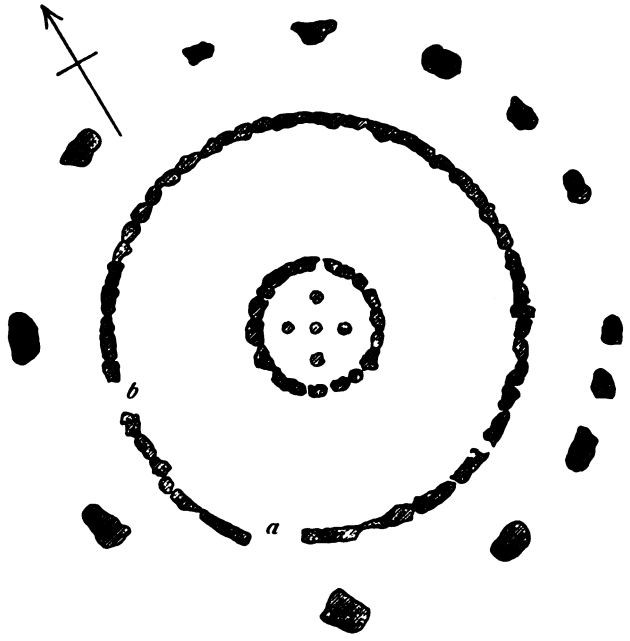


Fig. 127.—Diagrammatic Ground-plan of Stone Circle at Kingcausie (78 feet in diameter).

At Auquhorthies of Kingcausie, also in the same parish, a deposit of calcined bones and fragments of an urn were found in the centre of a similar triple circle enclosing an area of 120 feet in diameter. On its external circumference thirteen stones remain, the largest of which is 9 feet high. The larger of the two interior circles is remarkable, as presenting the same feature which has been already remarked as characteristic of the external structure of many of the larger circles in Aberdeenshire, viz., a large recumbent slab placed so as to fill the space between two uprights on the south-west side of the circle. In this case, only one of the uprights remains

5 feet high and 3½ feet thick. A cavity shows where the corresponding upright had stood at no distant date. The recumbent stone between them measures 7 feet in length and 4 feet in height. The remainder of this interior circle, as in the neighbouring circle of Kingcausie, is composed of smaller stones set on edge end to end. The smaller of the interior circles, also formed of small stones on edge placed end to end, encloses a central space of 14 feet in diameter, within which the deposit was found.

Fig. 128.—Urn found in a Stone Circle at Newton of Montblairy (13¼ inches in height).

On the farm of Newton of Montblairy, in Aberdeenshire, there was a large stone circle, of which all the stones but one had been removed. It was excavated by the late Mr. Alex-

ander Morrison of Bognie many years ago. There is no detailed record of the excavation, but a large urn (Fig. 128), which was found filled with burnt bones, was subsequently sent to the National Museum. It is of the cinerary form, and more than usually ornate in character, decorated with simple bands of short oblique lines, and bold projections underneath the overhanging lip. It measures 13½ inches high, and the same across the mouth, tapering from the shoulder to a base of 5 inches diameter.

Recently, in excavating a small circle in the grounds of Balbirnie House, near Markinch, Fife, a number of broken urns of the cinerary type were disinterred, and among the burnt bones were several small fragments of a thin blade of bronze.

Reviewing the whole series of these burials, we find that they invariably present a certain set of typical characteristics. They are burials, mostly after cremation, but occasionally of unburnt bodies,—the burnt and unburnt burials occurring in the same group, and with similar associations. The objects accompanying the burials in the character of grave-goods are small pins of bronze, portions of thin bronze blades, chips of flint, wrist-guards, and perforated war-axes of polished stone. Such things as these are not found with every burial, but urns or fragments of urns of the same forms and ornamentation as those which we have otherwise ascertained to be characteristic of Bronze Age interments, are found on all the sites. In their essential or underground phenomena, these burials are therefore in all respects similar to the burials which have been described in the previous Lecture. But in their non-essential or overground phenomena there is a very remarkable difference. The burial ground is fenced off from the surrounding area by a circle of stones, sometimes mere roughly-shaped natural boulders, rolled into their places on the circumference of the imaginary circle, enclosing the

burials ; at other times tall slabs, set erect on their ends, and firmly fixed in that position in the soil. Sometimes there is a trench, or a trench and embankment of earth, surrounding the circle of stones. At other times there is a differentiation in the construction of the circle of pillars, which, at its south-west side, has the space between two pillars filled by a huge recumbent slab, set usually on its edge. Occasionally the stone circle is doubled, the inner circle being formed of smaller slabs placed end to end, with their edges slightly projecting above the surface of the soil. In rarer cases, there is a third circle, within the second, of the same character. From the frequency with which these burial circles are found to contain a plurality of interments, it is obvious that they are not the monuments of single individuals, but family or tribal burying-grounds. From the fact that they contain interments, burnt and unburnt, it is obvious that they were in use when both these customs were practised, while the occurrence of bronze in association with the burnt interments assigns them to the Age of Bronze.

In all these instances, the circular stone-setting, whatever may be the precise form which it assumes, has been found to be the external sign by which the burial ground is distinguished from the surrounding area. Like the cairn, it is thus the visible mark of the spot of earth to which the remains of the dead have been consigned. Of course it is impossible to say, and it is not necessary that it should be affirmed, that in every stone circle the evidences of interment will be found. There are cairns and cists that have yielded no such evidence, but the absence of the evidence in some cases does not affect the general conclusion drawn from the concurrent testimony of the many instances in which the evidence is distinct and unmistakable. There may be stone circles which have yielded no conclusive evidence of interment, but the want of evidence in a few cases (to whatever

cause it may be attributed) cannot affect the general conclusion drawn from the many cases in which the evidence is distinctly concurrent. In other words, we have so many stone circles which, upon proper investigation, have proved themselves burying-places, that it is impossible for us to conclude that those which are still uninvestigated will disclose a different purpose for this type of structure.

Fig. 129.—Large Stone Circle at Stennis, Orkney (366 feet in diameter).

The colossal size of their pillar-stones, the magnitude of the area enclosed, the care and labour expended in trenching and fencing it, are features which give to these singular constructions a peculiarly impressive character. This impressiveness is specially characteristic of such a circle as that of Stennis, in Orkney (Fig. 129), which stands within a circular trench enclosing an area of two and a half acres. The diameter of the area is 366 feet, and the trench surrounding it is 29 feet in width, and about 6 feet in depth. The enclosed area is approached on two sides by level causeways crossing the trench, which are about 17 feet wide. The circle of pillar-stones stands about 13 feet distant from the inner side of the trench. They are placed about 17 feet apart, on the circumference of a circle of 340 feet in diameter. The original number of erect stones was probably sixty, of which there are but thirteen now standing. Ten others are prostrate, and the stumps or fragments of thirteen more bring the number still recognisable on the site to thirty-six.

The highest stone standing is 14 feet, the lowest about 6 feet. Of the twenty-three stones which are either erect or prostrate, and probably entire, there are fourteen which exceed 10 feet in height, and five of these exceed 12 feet in height. The greatest breadth is about 8 feet, the general average being about 4 feet, and the thickness 1 foot.

Fig. 130.—Smaller Stone Circle at Stennis (104 feet in diameter).

A smaller circle, now almost obliterated, stood a little to the south of the greater circle of Stennis. The whole interior area of the circle (Fig. 130) was raised about 3 feet above the natural surface, and a circumscribing earthwork of the same height, rising from a base of about 36 feet in width, seems to have surrounded it at a distance of 36 feet from the bottom of the slope of the included mound. Only two pillar-stones of the circle remain standing, a third lies prostrate, and the stump of a fourth is visible. Of the two that are still erect, one is 17 feet high and 6 feet broad, and the other 15 feet high and 4 feet broad. The prostrate pillar-stone is 19 feet long and 5 feet broad.

At Callernish, in the island of Lewis, there is a very remarkable stone circle (Fig. 131), with lines of standing stones proceeding from its circumference, which give the whole figure of its ground-plan some resemblance to a long-shafted cross. The circle consists of thirteen stones erected somewhat irregularly on a circumference of 42 feet in diameter. A larger stone, 17 feet high above the ground and 5½ feet broad at the base, stands in the centre of the

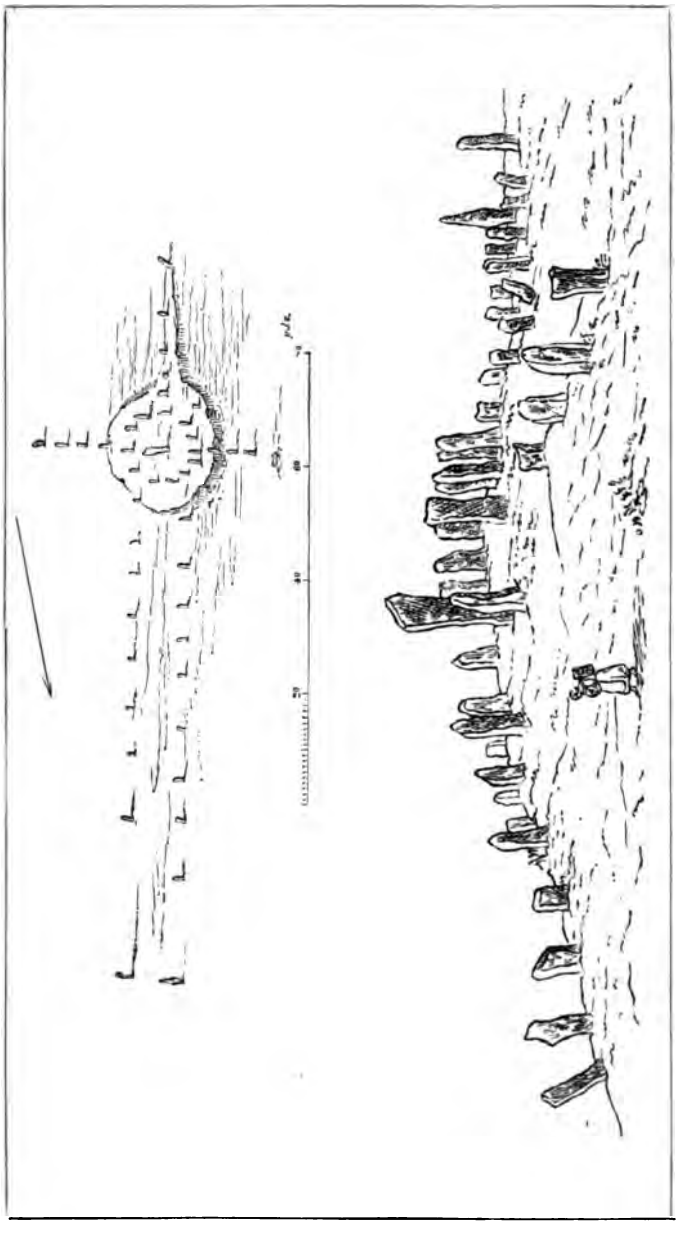


Fig. 131.—Ground-plan and enlarged view of Stone Circle at Callernish.

circle. A line of five stones extends from the circumference to a distance of 96 feet to the south; a similar line of four stones extends 52 feet to the east; and one of four stones 36 feet to the west. Two parallel lines going off to the northward form an avenue 270 feet in length, and about 27 feet in width. The total number of stones is forty-eight, and the total length of the monument, from the extremity of the double line through the centre of the circle to the extremity of the single line beyond, is 408 feet, and the length of the transverse arms from point to point across the centre of the circle is 130 feet.

In 1858, Sir James Matheson caused the peat which had grown on the site of this monument to be removed. The average depth of the peat from the surface to a rough causewayed basement in which the stones were imbedded was 5 feet. In the process of the removal of this accumulation,

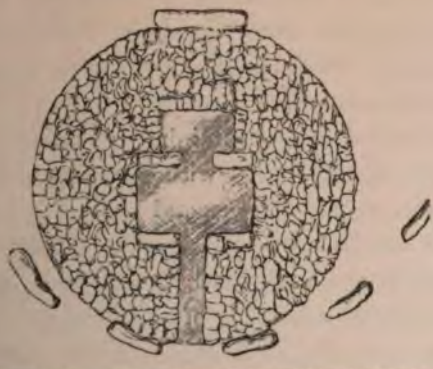


Fig. 132.—Ground-plan of Chambered Cairn within the Circle at Callernish (20 feet in diameter).

the workmen uncovered the remains of a circular cairn (Fig. 132), occupying the space between the centre stone and the east side of the circle. In the centre of the cairn was a chamber with regularly built internal walls, and a passage leading from it to the outside of the cairn, the opening being

placed between two of the stones of the circle. The chamber was divided into two compartments by slabs placed across the floor, leaving an opening between their edges a little less than 2 feet wide. Beyond these slabs the inner compartment was formed of dry-walling in the sides, and a long slab set on edge at the back. The passage was about 6 feet in length, and 2 feet wide, entering the chamber between two slabs set on end facing the two on each side of the entrance to the inner compartment. The first compartment was 6 feet 9 inches from side to side, and 4 feet 3 inches from front to back, the second, 4 feet 4 inches from side to side, and 2 feet 1 inch from front to back, on the floor, widening upwards in consequence of a slight inclination of the slab at the back. With the exception of a single stone, which was supposed to have been a lintel, there was no appearance of a roof, and there is nothing on the record of the excavation to show whether the roof of the chamber had fallen in, or whether it had been removed. It is not even stated what was the height to which the side-walls were found standing. But it is obvious at a glance that here we have a very peculiar construction,—a cairn containing a chamber divided into compartments, and furnished with a passage opening to the outside of the cairn. The general character and relations of this type of structure will become apparent when we have reached a stage at which we shall be able to deal with a number of examples of cairns that are similarly chambered.

In the meantime I call attention to the occurrence of this small chambered cairn in association with a great stone circle, because it is the great stone-setting, and not the small cairn, which is plainly the principal member of the composite structure, and because the form which here appears in a subordinate character is a cairn which is chambered, and not a cairn which covers a cist. Hereafter, when we

come to deal with the chambered cairn as the typical form of the Stone Age burial structure, we shall find them occasionally encircled by stone-settings or circles of standing stones, but we shall find the relative positions of the two members of the composite structure reversed—the cairn being then the principal object, and the stone circle its subordinate adjunct. In this instance at Callernish we have to do with a composite structure which is principally a stone-setting, that is, a structure in which the idea of the cairn has given way to the idea of the circle. We have already seen that when the circle is associated with a cisted cairn—which is a structural form of a lower type than the chambered form—the circle always appears as the principal member. Hence it appears that the circular stone-setting, which originally arose as an adjunct to the chambered cairns of the Stone Age, acquired its dignity and importance in the subsequent period by the degradation of the cairn structure which it encircled, and came at last to stand alone, as the most distinguishing and characteristic mark of a Bronze Age burial. In this capacity it sometimes appears entirely alone, at other times it is itself surrounded by a trench, or by a trench and rampart or ring-fence of earth. But whether it may be the surrounding enclosure of a cairn, or whether it may be itself enclosed by a trench and rampart, or whether it may stand alone, the concurrent testimony of all the investigations of its actual phenomena results in this, that in every case in which the investigation has disclosed evidence of purpose or of use, it has always been evidence of included burials. No other evidence indeed exists, and the conclusion which is unavoidable is therefore not assailable on the ground that it is not according to evidence.

It is not possible, in the present state of our knowledge, to proceed further than this with certainty. We are now dealing with typical characteristics, that are not exclusively

confined to a limited area of Scotland or of Britain, or even of Europe. Burials associated with overground phenomena that are in the main similar to those that have now been described are found over a wide area of Northern and Western Europe. But over this wide area of their known occurrence, the nature and character of their underground phenomena are by no means constant. For instance, although stone circles occur in considerable numbers in Scandinavia,[1] and although in that area they are also found enclosing burials after cremation, yet the essential characteristics and accompaniments of the interments assign them to the Early Iron Age, while in Britain they are exclusively of the Age of Bronze.

From these facts it appears, that while a certain uniformity in the phenomena of the burials exists in smaller areas, there

[1] In Norway and Sweden stone circles are relatively of very much rarer occurrence than grave mounds. They are not generally remarkable, either for the size of the circles themselves, or for the massiveness of the stones of which they are composed, and they do not present the peculiarity which has been so often noted among the circles of the north-eastern districts of Scotland, of having the south-west side of the circle distinguished by a great recumbent stone filling the space between two uprights. The common Scandinavian form is that of a simple circle composed of from eight to thirteen stones; occasionally there are two concentric circles, one within the other, and sometimes, as in some of the Scottish examples, the inner circle is composed of small flat stones set on their edges, end to end, and scarcely showing themselves above the turf. Sometimes also the whole space within the circle is paved with small flat slabs. Occasionally there is a central stone within the circle, and not unfrequently the form of the external stone-setting, instead of being circular, is square or oblong, or even triangular. The circles of Scandinavia are popularly imagined to have been dom-rings or thing-steads, and but few of them have as yet been systematically explored. The results of their investigation, however, have been similar to the results of the investigation of the Scottish circles, with this difference, that where burials have been found within them, they have been invariably burials of the Iron Age.—See Nicolaysen's *Norske Fornlevninger*, under the word *kreds*; and see also the *Foreningen for Norske Mindesmaerkers Bevaring—Aarsberetning* for 1868, p. 139; 1869, pp. 13, 119, and 120; 1872, p. 12; and 1877, p. 230.

is a wide diversity exhibited in more extended areas. As our knowledge of the facts increases in its range and specialty, as the nature of these variations is gradually ascertained, and their limits defined with precision, the time will come when their significance with relation to the areas in which they are manifested may be determined. At present we are unable to define with any degree of accuracy the limits of the area over which stone circles are found, and equally unable to say within what limits they are found to contain burials assignable to the Ages of Bronze or Iron. But this we are in a position to say, from existing evidence, that, so far as they have yet been investigated in Scotland, their nature and purpose has been clearly determined to be sepulchral; and that in so determining their nature and purpose, we draw this conclusion from the same evidence and by the same process by which we determine the nature and purpose of urns, or cists, or cairns, or any unrecorded and uninscribed variety of sepulchral monument.

The same conclusion appears to be deducible with reference to another class of monumental stone-settings, consisting of groups of upright stones which are not arranged in a circular form. These are much more rarely met with than the circular groups;[1] and the available evidence regarding their period and purpose is therefore drawn from a basis of investigation which is less extensive, although, so far as it goes, it is quite as definite and distinct in its indications of

[1] So far as we know at present, their occurrence in Scotland is confined to the counties of Caithness and Sutherland, but there is reason to believe that they also occur in Wales. On a *ffrid* or mountain enclosure called Ffrid-can-awen, in the neighbourhood of Pentrevocles, there were recently discovered three cists containing burnt bones, and near them a number of parallel rows of erect stones. Another series of parallel rows of erect stones, consisting of sixteen rows, is situated about a mile and a half distant from those already mentioned.

sepulchral associations. Their area, so far as is yet known, is chiefly confined to the extreme northern part of the mainland of Scotland.

On the north side of a small valley in the Yarhouse Hills, in the parish of Wick, Caithness, and near the Hill Fort of Brochwhin or Garrywhin, which I have already described,[1] there is a series of rows of small grey slabs (Fig. 133), like the headstones of a country churchyard, all set with their broad faces looking across the lines. They lie on the slope of the valley, the lines ascending towards the crown of the slope, and coming closer together as they ascend, so that, when looked at from above, they present the appearance of a radiating or fan-shaped group. A few feet from the termination of the narrow end of the group there was a small circular knoll, about 35 feet in diameter, and 5 feet high in the centre, thickly covered with turf and heather. When its interior had been laid bare, it was found to be a sepulchral cairn, in the centre of which was a cist, placed slightly below the original surface, and measuring 3 feet 5 inches in length, 2 feet 4 inches in width, and 1 foot 9 inches deep. The sides were composed of four slabs set on edge, but on one side a thin slab was inserted with about 4 inches of rubble between it and the outer slab, thus narrowing the internal breadth to 1 foot 10 inches. The cist lay nearly east and west. It had an enormous covering-stone, and the bottom was simply the subsoil on which the whole cairn rested. At the east end lay the fragments of a bowl-shaped urn, ornamented with impressed markings of a twisted cord, and at the same end of the cist we found the enamel crowns of a few human molars. The burial had been unburnt, and so complete had been the decay of the bones that the only vestiges of the whole skeleton remaining were the enamel crowns of the teeth. Two roughly-shaped flint flakes, with

[1] *Scotland in Pagan Times:* The Iron Age, p. 273.

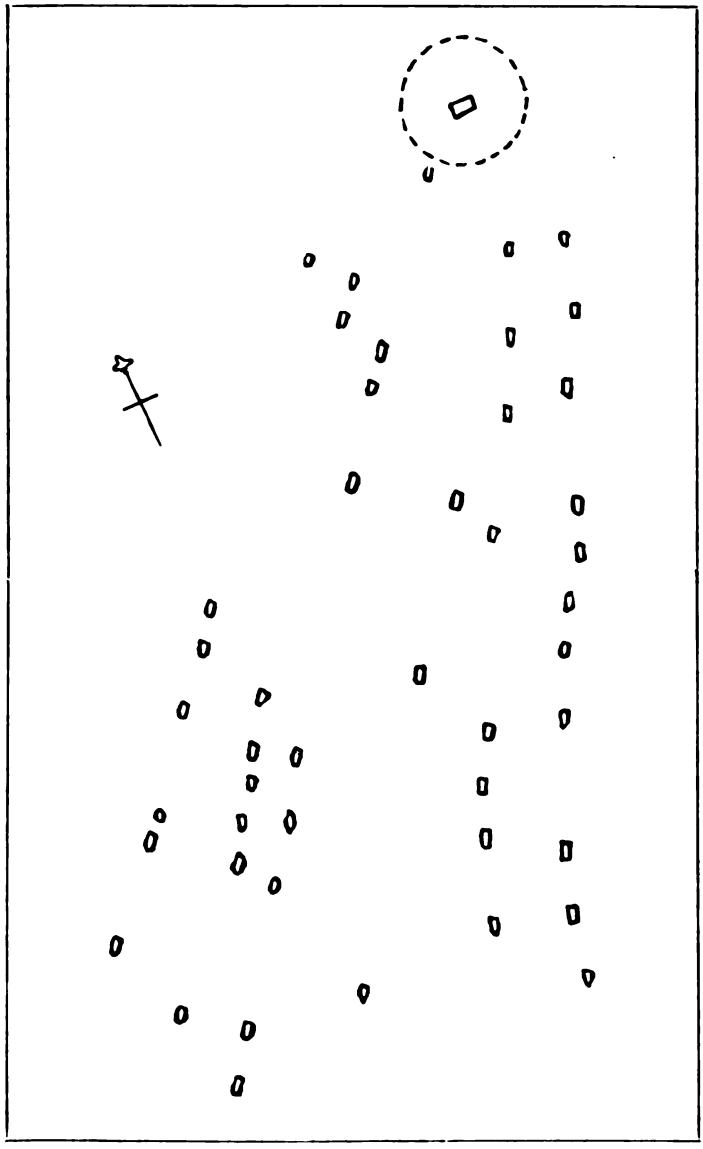


Fig. 133.—Stone-setting of six parallel rows radiating from a Sepulchral Cairn at Garrywhin, Caithness (200 feet in length).

secondary working on the edges, were found beside the fragments of the urn. Although there was no evidence of the presence of bronze, the form of the urn and the general characteristics of the interment were precisely those which have been so often remarked as occurring in association with implements of bronze. The cairn, taken by itself, thus differed in no respect from many smaller and larger cairns of the Bronze Age which have been described in the preceding Lecture. But taken in connection with the associated group of standing stones, it certainly presented a striking dissimilarity of external feature. Yet this dissimilarity was only on the surface; the essential features of the burial were those of the general group of Bronze Age burials. Even in the features that were dissimilar, there was a recognisable relationship of type. The cairn was associated with a setting of standing stones, although that setting had not been arranged in the circular form with which we have now become so familiar. The cairn was small, and the stones of the setting which was thus associated with it were also small in comparison with the great monoliths of some of the larger circles; but they were not smaller than the stones of many circles, and though they assumed this peculiar arrangement, they were—like the circles—found in apparent association as the adjuncts to a sepulchral cairn. From this cairn the group of standing stones extended in six diverging lines to a distance of 200 feet. Close to the cairn the width across the whole six lines was about 50 feet, while at the further extremity the whole width was 100 feet. The stones were mostly small flattish slabs, few of them exceeding $2\frac{1}{2}$ feet in height and the same in width, irregular in form, and placed at irregular intervals from each other. They were firmly fixed in the ground, being frequently wedged between two smaller stones placed at either side in a shallow pit which had been dug to receive their bases. The whole

number of stones in the group is now less than fifty, but originally it was probably much greater.

On the other side of the valley there is another cairn of similar character, having a central cist of somewhat larger dimensions, which had been long previously opened and rifled. The cist, which lay north-west and south-east, was beautifully constructed of four large slabs, and measured internally 5 feet long, 2½ feet wide, and 21 inches deep. The stones of the cairn had been partially removed for utilitarian purposes, but what remained of it showed a diameter of at least 18 feet. From the cairn there extended the broken remains of a group of lines of standing stones, which had been apparently at one time of even greater extent than that on the north side of the valley. Enough remained to demonstrate the occurrence of a similar association of a group of stones set in irregular rows, in association with a sepulchral cairn, which was situated at one end of the group.

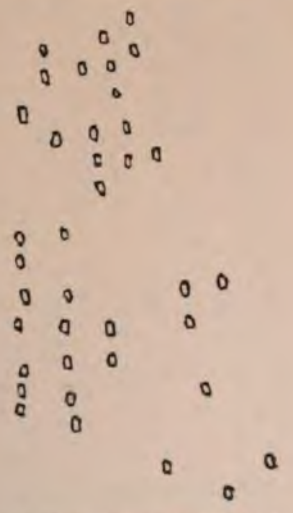


Fig. 134.—Stone-setting of six parallel rows at Camster, Caithness (105 feet in length).

At Camster, in the same county, there is another group of stones set in rows (Fig. 134), apparently in connection with a cairn. The group consists of six lines running nearly north and south, with an extreme length of 105 feet, the width across the whole of the lines at the head being 30 feet, and at the further extremity 54 feet. As in the other instances, the stones are small flattish slabs, none of them exceeding 2½ feet in height, placed with their flat sides

looking across the direction of the lines. At a little distance from the head or narrow end of the group are the remains of a small cairn with a central cist, in which were the remnants of an unburnt skeleton.

Fig. 135.—Stone-setting of eight parallel rows at Yarhouse, Caithness.

On the east side of the Loch of Yarhouse, in a place locally known as the Battle Moss, on the estate of Thrumster, there is a group of lines of standing stones (Fig. 135), consisting of eight rows of irregular length. The lines run nearly north and south; the stones are somewhat irregularly placed, and there are now many gaps in the rows. The extreme length is 384 feet, one of the lines extending to more than double the length of the others.[1] The second longest line is about 170 feet in length, and the remaining six about 130 feet. The largest stones of which this group is composed do not exceed 2½ feet in height, by 2½ feet in breadth, and 15 inches in thickness. They are for the most part firmly fixed in the soil, and often wedged at the bases by smaller stones packed in on either side. There is now no

[1] This is the line to the right of the group, which extends much further to the north than is shown on the plan.

appearance of a cairn or cist in connection with the group, and excavation at different parts of the lines failed to yield any evidence of associated interments.

On the hillside of the Many Stanes at Clyth, also in Caithness, is the most remarkable group of this description (Fig. 136). It consists of twenty-two rows of small flat stand-

Fig. 136.—Stone-setting of twenty-two rows at the Hill of the Many Stanes, Clyth, Caithness (150 feet in length).

ing stones, the lines averaging from 145 to 150 feet in length. Like most of the other groups, the width across the lines is gradually increased from one end to the other by a slight divergence of the lines, so that, while the width across the narrow end, looking towards the north, is 118 feet, the width

at the further end is 188 feet. The lines lie on the south slope of the hill, and diverge from north to south down the slope. The largest stones are about 3 feet high, 3 feet wide, and 15 to 18 inches thick. There is now no trace of an associated cairn or burial. The total number of stones now standing in this group exceeds four hundred.[1]

A series of groups consisting in the aggregate of upwards of 150 stones, arranged in irregular rows, and clusters of rows, at Lierabol, in the parish of Kildonan, Sutherlandshire, is associated with a group of cairns of the Bronze Age. One of the cairns, which contained a central cist, 4 feet long, in which was a burnt interment and some beads of jet, had a circle of stones set at intervals around its base; and close beside one of the stones in the circle was found an urn of the cinerary type inverted upon a small flat slab, at a depth of 2 feet under the surface, and covering a deposit of burnt human bones, among which was a small oval tanged blade of bronze.[2]

At Achkinloch, in the parish of Latheron, Caithness, there is an example of a stone-setting of very peculiar form (Fig. 137), which I notice here because it is the only instance of its kind known to me. It is in form a long oval, somewhat irregular in outline, and wider at one end than at the other. The two ends of the figure are also dissimilar in this respect, that, while the oval outline is complete at the wider end, the narrow end has been left incomplete and open. The stones are set with their broader faces at right angles to the direction of the lines, and not parallel to or in the plane of the

[1] These Caithness stone-settings were first described by me in a "Report on the Ancient Remains of Caithness," printed in the Memoirs of the Anthropological Society, London, vol. ii. p. 251. They were subsequently visited and planned by Sir Henry Dryden, and extracts from his Notes regarding them are given in an Appendix to Mr. James Fergusson's well-known work on *Rude Stone Monuments*.

[2] This blade is figured in the previous Lecture, at p. 22.

lines, as in all the groups that have just been described.[1] The length from the closed to the open end of the oval is 226 feet, and the width in the middle, from one side to the

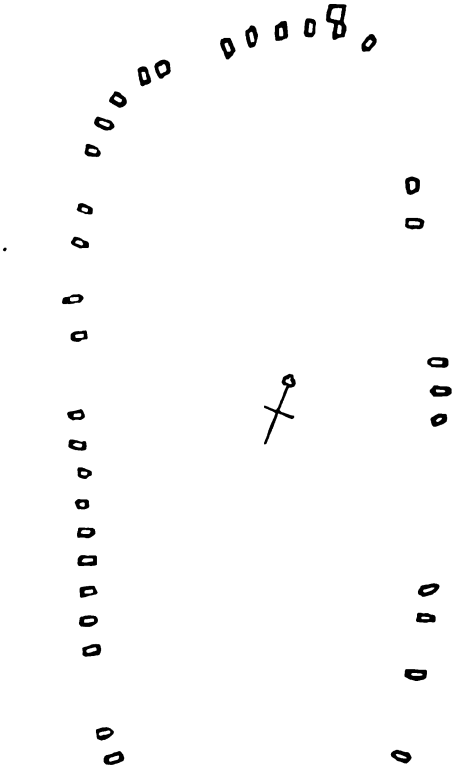


Fig. 137.—Stone-setting of peculiar form at Achkinloch, Latheron, Caithness (226 feet in length).

other, 110 feet, inside measurement. At the open extremity the two sides are 85 feet apart. Supposing that the gaps

[1] As a general rule, to which I know no other exception, the stones of these groups of parallel rows, and the stones of stone circles, are set with their long faces in the line of the direction of the rows, or in the line of the curve of the circle, and never across the line.

have been occasioned by the removal or overthrow of some of the stones, they appear to have been set up at intervals of about 8 feet along the outline of the oval figure, but there is nothing to show why that form was preferred. There are now only thirty-six stones remaining in position, but if the gaps were filled at the 8-feet intervals, the number would be fifty-four. The stones are larger than those of the groups which have just been described, the largest now standing being upwards of 5 feet above the ground, and others of less height measuring from 4 to 5 feet in breadth, and 12 to 20 inches in thickness. There is at the wide end of the oval a cist-like construction of four slabs, set in the ground, and abutting against one of the standing stones. It is not associated with the remains of a cairn, and beyond the fact that it appears to be a cist, there is no actual evidence of its having contained a burial. Without this evidence it would be unscientific to attribute a sepulchral purpose to this unique variety of monument, and we must therefore be prepared to leave the questions of its age and purpose in abeyance until the evidence has been supplied by other examples of similar type which may yet be discovered.

But we are not left in the same uncertainty with regard to the other varieties of monumental stone-settings with which I have dealt in this Lecture. We have now seen that in all cases in which these groups of rows of standing stones have yielded evidence of association or purpose, they have been associated with a purpose which was sepulchral. We have previously seen that the same thing was fully demonstrated with regard to the circles. It appears therefore that whatever may be the form assumed by the stone-setting—whether it may be a circle or a setting in parallel rows—the conclusion is inevitable (if it is to be a conclusion drawn from evidence), that they are the external adjuncts of Bronze Age burial. It appears also on review of the evidence that

the variations in the form or arrangement of the stone-setting are not accompanied by corresponding variations in the burial customs. In point of fact, the whole tenor of the available evidence goes to show that the essential features of the burials remain constant throughout a wide range of variation in the form of the external and visible memorials of the interment, and it thus becomes clear that it is not these variable overground features, but the persistent similarities of the underground phenomena that are the typical characteristics.

By the recognition of this, as the legitimate result of their scientific investigation, the stone circles of Scotland are certainly divested of much of the unscientific interest and all the quasi-historical relations that have been attributed to them. But it is in singular contrast to the fanciful theories that have prevailed in recent times regarding them, that the writer of the very first paper read to a scientific Society on the Stone Circles of Scotland approaches the subject of their origin and purpose. In a letter written to John Aubrey (the inventor of the Druidical theory), in 1692, and subsequently communicated to the Society of Antiquaries,[1] Professor Garden of Aberdeen describes the stone circles of the district typically, and treats the question of their origin and purpose in a purely scientific manner. He states that they are monuments of tall unpolished stones set upon end, and placed circularly, not contiguous to each other, but at some distance: the commonest variety have but one circle of stones standing at nearly equal distances; the second variety is a similar circle with a large broad stone standing on edge, which fills up the whole space betwixt two of those stones which

[1] A copy of Professor Garden's letter was read to the Society of Antiquaries of London, Dec. 4, 1766, and printed in *Archæologia*, vol. i. p. 336.

stand on end; and the third variety has a circle of smaller stones within the circle of the great stones. As to what is known about them, he says they are generally called Standing Stones, and the people regard them as places of Pagan worship. He then goes on to state his own conclusion regarding them—a conclusion which is worthy of our attention, both on account of its nature and of the manner in which it is deduced:—"Albeit from the general tradition that these monuments were places of Pagan worship, and from the historical knowledge we have that the superstition of the Druids did take place in Britain, we may rationally collect that these monuments have been temples of the Druids, *yet I have found nothing hitherto, either in the names of these monuments, or the tradition that goes about them, which doth particularly relate to the Druids or point them out.*" But he adds that many persons yet alive declare that they did see ashes of some burnt matter digged out of the bottom of a circle set about with stones placed close together in the centre of one of these monuments which is yet standing (1692) near the church of Keig. It is clear from this lucid statement that in the end of the seventeenth century there was no tradition among the people connecting these monuments with the Druids.[1] They were simply regarded as places of Pagan worship. In so regarding them the people among whom this attribution was current may have been perpetuating a conjecture or handing down a tradition; but there is no evidence to which we can appeal for corroboration of the averment.

In point of fact, there is nothing which is of the nature of evidence by which the stone circles of Scotland can be

[1] It is a most suggestive and significant fact that in the first general Index to the *Archæologia* (or Transactions of the Society of Antiquaries of London), the entry for "Stone Circles" is given as follows: "Circles of Stones, *see under* Stones;" while in the second Index, compiled nearly forty years later, the entry is: "Stones, Circles of, *see under* Druids."

assigned to any race or historic order of men. Taking them at their own testimony, the only evidence they yield amounts to this, that they are the funeral marks of our Pagan predecessors of the Age of Bronze. Their culture and civilisation, as thus dimly disclosed to us, are strangely unfamiliar to our experience, and on this account we do not readily perceive the true significance of the phenomena by which they are manifested. That significance will only be fully revealed when the evidence is completed by the description of the manifestations of the Bronze Age culture and civilisation which are not connected with its burial usages, and these will form the subject of the succeeding Lecture. But looking at the obvious fact that so many of the relics which have been described in this and the preceding Lecture are objects constructed for definite purposes in every-day life, and that they have been devoted to the grave by the feeling which was of old termed "pious," in relation to the manner in which it regarded the honour of the dead, it seems impossible to doubt that it is culture and that it is civilisation that are thus manifested, although they are manifested by unfamiliar phenomena. Such devotion in honour of the dead implies an attitude of mind which is inconceivable apart from the existence of culture. Through these phenomena there is discernible a moral feeling prevailing over the greed of gold—placing most massive and costly ornaments within the urn, or on the rough slab that covers the grave-chest, and leaving them there undisturbed with but a few inches of earth to cover them. We perceive that the cairn, the circle of erect stones, the broad deep trench which marks off the grave ground from the surrounding area, are memorials of moral significance, whether they be regarded as the products of filial piety and family affection, or of more public sympathy and appreciation of worth. Looking at the magnitude of

the work in some cases, or at the immensity of the masses of the individual stones in others, we discern indications of the consciousness of power and ability to overcome the forces of nature, while also recognising the clearest evidence of the existence of organisation and co-operation which are the necessary concomitants of civilisation. And when to this indirect testimony we add the direct evidence of technical skill and artistic taste supplied by the presence of the highly decorated urns and the various objects of use or ornament, in stone and bone, bronze and gold, amber and jet, which accompany the remains interred in these constructions, we may well ask—to what we shall attribute these various manifestations if it was not culture in the individual that produced the skill and developed the taste, and if it was not civilisation in the society in which he lived and moved that furnished the means and the leisure which made that culture possible.

LECTURE III.

WEAPONS, IMPLEMENTS, ETC., OF THE BRONZE AGE.

In the two previous Lectures I have dealt with the sepulchral remains of the Bronze Age as they are found in cists and cemeteries, in cairns and stone circles. There is no example of a dwelling or a stronghold which can be assigned with certainty to the Bronze Age in Scotland; and the remaining materials from which conclusions may be drawn with regard to the culture and civilisation of that period consist of the weapons, implements, and ornaments of the people which have been preserved in the soil, though not associated with burials.

In this Lecture I shall describe the principal hoards or deposits of these articles which have been found in Scotland, and from them determine the form and character of the different varieties of arms, implements, and ornaments that were in use in the Age of Bronze.

In 1869, in digging the foundations of a house in Grosvenor Crescent, Edinburgh, a very remarkable deposit of bronze weapons was discovered. The precise number of the articles is not known, but it is stated by an eye-witness that there must have been fourteen or fifteen swords, several of which presented traces of the scabbards and the side-plates of the hilt. With them there were also found a broken bronze

pin, with a flat circular head ornamented with concentric rings (Fig. 138), a hollow circular button or belt-mounting (Fig. 139), furnished with loops on the concave side (Fig. 140), and a plain ring of bronze, 3 inches diameter, formed of a cylindrical rod, little more than $\frac{1}{8}$ inch thick. Only four of the swords are now known. Three of these have flat handle-plates, pierced with rivet-holes, but without pommels. The fourth sword (Fig. 141) is different, inasmuch as it has

Fig. 138.—Head of Bronze Pin (actual size).

Figs. 139 and 140.—Obverse and reverse of Bronze Mounting (actual size).

the grip and pommel of the handle complete, and cast in bronze. It is a short sword, its whole length being only 20 inches. The blade is leaf-shaped, the hilt without a guard, but with a grip of 4 inches in length, terminating in a rounded pommel 2 inches diameter and $1\frac{1}{4}$ inch in height. The grip is $\frac{5}{8}$ inch thick, and 1 inch in width at the centre, widening to $1\frac{7}{8}$ inch at its junction with the blade. A break in the pommel at one side reveals the fact that the core of hardened clay on which it was cast is still within it. Both hilt and pommel are pierced by holes,

which at first sight suggest the rivet-holes in the handle-plates of the swords from which the mountings of the grip are wanting. But the holes in this hilt do not pass through, and they are not opposite each other. Some other explanation of their purpose is therefore necessary. I have stated that the clay core on which the handle was cast is still within it. When the core was placed within the mould, it was necessary that it should be supported in its true position in the cavity of the mould, and this could not be more conveniently accomplished than by pins or projections which would leave corresponding holes in the casting of metal.

Fig. 141.—Bronze Sword found in Edinburgh (20 inches in length).

In the British Museum there is a sword which formed part of a similar hoard of bronze objects found at Tarves, Aberdeenshire. It closely resembles the sword last described, but wants the side-plates of the hilt. The rivets remain fixed in the handle-plate, and this may be taken as evidence that the side-plates which made up the roundness of the grip, and were secured in their places by these rivets, were made of more perishable material than bronze—probably of bone,

horn, or wood. The rounded pommel, however, is of bronze, and when the side-plates of the hilt were in position, with their ends covered by the pommel, the resemblance to the Edinburgh specimen would have been so complete that a matrix modelled from the Tarves sword would have given a cast in bronze of the entire weapon, almost precisely similar to the sword found in Edinburgh. With the Tarves specimen there were also found two other swords of the same type as those found with the Edinburgh specimen, having flat handle-plates pierced with rivet-holes, but without pommels. With the swords at Tarves there were also found two bronze pins, with flat circular heads, like those found at Edinburgh, and a scabbard-end of bronze 5½ inches in length.

The first donation presented to the Museum of the Society of Antiquaries of Scotland, on the 16th January 1781, consisted of a large portion of a hoard of bronze objects which had been dredged up from the bottom of the loch of Duddingston, near Edinburgh. Sir Alexander Dick of Prestonfield, who had established a process of marl-dredging in the loch for agricultural purposes, thus describes the circumstances of their discovery:[1] "In the third year of my progress, as my operations were proceeding northward, about 150 yards from the verge of the King's Park, the people employed in dredging in places deeper than usual, after having removed the first surface of fat blackish mould, got into a bed of shell-marl, from five to seven feet deep, from which they brought up in the collecting leather bag a very weighty substance, which, when examined as it was thrown into the marl-boat, was a heap of swords, spears, and other lumps of brass." The composition of the hoard presented to the Museum[2] consisted of twenty-three portions of spear-heads; twenty-nine pieces of broken swords; a ring and staple

[1] MS. letters to the Society of Antiquaries of Scotland, 1780-81.
[2] Smellie's *Account of the Antiquarian Society*, p. 39.

of large size, which we now recognise as one of the side-handles of a large caldron of thin beaten bronze—probably the vessel in which the hoard was contained. The whole of the articles appear to have been purposely broken. The fragments of spear-heads are portions of large weapons, with long hollow sockets and leaf-shaped blades, the socket prolonged as a tapering cylindrical midrib to the point of the blade, and cored to within an inch or so of the point. Some have the blade pierced by segmental openings on either side of the midrib. The fragments of the swords are mostly less than 6 inches in length. They show that the form of the weapon was a leaf-shaped blade, terminating in a flattened hilt-plate pierced by rivet-holes for securing the side-plates which made up the grip.

In making the Queen's Drive round Arthur's Seat in 1846, on the face of the hill overlooking the same loch, two swords of bronze similar to these were found imbedded in the soil. They are both entire, and they thus show the perfect form of the swords which were found in the loch below. One measures $26\frac{1}{4}$ inches in length, the other $24\frac{3}{4}$ inches. The form is peculiar, and unlike any variety of sword with which we have become acquainted in our survey of the weapons of the Iron Age. The blade is leaf-shaped, widest at about two-thirds of its length from the handle-plate, which is flat, and pierced by rivet-holes for the attachment of the mountings of bone or horn, which must have made up the roundness of the grip.

At Gogar, near Edinburgh, a bronze sword and scabbard-point were found in a gravel-pit in 1811. The sword (Fig. 142, No. 1) is leaf-shaped, with flat handle-plate, pierced by rivet-holes, and measures 22 inches in length. The scabbard-end (Fig. 142, No. 2) is of the same form as the Tarves one, and $4\frac{1}{2}$ inches in length. In the same gravel-pit, but whether associated directly with the sword and scabbard-point or not

is not stated, there were found a small penannular gold ornament of peculiar form (Fig. 142, No. 3) and a circular penannular buckle of bronze (Fig. 142, No. 4), 3 inches

Fig. 142.—No. 1, Bronze Sword, 22 inches in length; No. 2, Scabbard-tip, 4½ inches long; No. 3, Penannular Gold Ring, actual size; No. 4, Bronze Buckle, 2 inches in diameter. All found at Gogar.

diameter. The gold ornament is of a type which is rare in Scotland, only one other specimen being known (Fig. 227), but it has occasionally occurred in England, and more frequently in Ireland. The bronze buckle or brooch is also of peculiar form and ornamentation, and is the only specimen of its kind known in Scotland. It is closely allied to a type of buckle of the Iron Age which is occasionally met with in Anglo-Saxon and Norwegian interments.[1]

At Cauldhame, near Brechin, in 1853, a hoard was discovered, consisting of four leaf-shaped swords, a scabbard-

[1] One closely resembling the Gogar specimen is figured in Akerman's *Pagan Saxondom*, Pl. xviii. Fig. 4. It was found at Rugby, and is described as a form frequently met with in Anglo-Saxon interments. Another is figured in the *Foreningen for Norske Mindesmaerkers Bevaring*, 1878.

point (Fig. 143), and a bronze spear-head, which is described as one of the largest examples hitherto found in Scotland. Two of the swords and the scabbard-tip are in the Museum. One of the swords measures 24 inches in length, the other is imperfect. They are leaf-shaped, with flat handle-plates pierced with rivet-holes. The scabbard-tip, which closely resembles the Gogar example, is $5\frac{7}{8}$ inches in length, $1\frac{5}{8}$ inch in breadth at the upper part, and $\frac{1}{2}$ inch at the lower end, the opening for the blade being $\frac{5}{8}$ inch wide in the middle.

Fig. 143.—Sheath-end of Bronze ($5\frac{7}{8}$ inches in length).

On the north side of the Point of Sleat, in the island of Skye, in or about the year 1851, a deposit of bronze weapons was found in the moss. The deposit consisted of a bronze sword (Fig. 144), two spear-heads, and a long slender bronze pin with an expanded circular cup-shaped head. The sword is leaf-shaped, with flat handle-plate pierced by rivet-holes. It measures $22\frac{1}{2}$ inches in length, the greatest width of the blade being $1\frac{3}{4}$ inch. The spear-heads have leaf-shaped

Fig. 144.—Bronze Sword, Spear-head, and Pin found in Skye.

blades, with long cylindrical sockets continued up the centre of the blade and tapering to the point. The socket is pierced

by a single rivet-hole on either side for attachment to the shaft. The whole length of each of the spear-heads is $7\frac{3}{8}$ inches, and the greatest width of the blade $1\frac{1}{2}$ inch. The pin is of great size, $10\frac{1}{2}$ inches long, nearly $\frac{1}{4}$ inch in diameter at the upper part, where it expands into a cup-shaped head, $\frac{1}{2}$ inch in depth, and $\frac{7}{8}$ inch in diameter. With these objects there was also found a socketed implement of a curiously bent leaf-shaped form, 4 inches in length. It is of the same type as another implement here figured with it (Fig. 145),

Fig. 145.—Bent Bronze Implements found in Skye, and at Wester Ord, Invergordon (4 and $4\frac{1}{2}$ inches in length).

which was found, with five other undescribed objects of bronze, some of which are stated to have been axe-heads and rings, under the corner of a large earth-fast boulder at Wester Ord, near Invergordon, in Ross-shire. The hoard appeared to have been wrapped in a cloth, and concealed under the boulder. The bent leaf-shaped and socketed implement is $4\frac{1}{2}$ inches in length. These two are the only examples of the type known in Scotland.

At Achtertyre, near Elgin, in 1868, a hoard of bronze articles was found in ploughing a mossy field. The deposit consisted of two spear-heads, one socketed axe-head with a loop at one side of the socket, two penannular rings with slightly expanded ends, some fragments of broken rings, probably four in number, and portions of a ring of metal of a greyish colour and friable, which on analysis yielded no copper, but only tin and lead in the proportion of nearly

four parts of the former metal to one of the latter.[1] The spear-heads, the largest of which (Fig. 146) is 11½ inches in length, have leaf-shaped blades, and cylindrical sockets, tapering regularly from the base, and cored almost to the point of the blade. In the socket, about an inch above the base, are two rivet-holes placed in the plane of the blade, for the attachment of the weapon to its shaft. The smaller of the two spear-heads is broken and incomplete. The socketed axe-head is also broken, and the thinner part of the blade wanting. The two penannular rings (one of which is represented in Fig. 147) are slightly oval in shape, swelling into knobbed extremities at the ends. They are about 3 inches in greatest diameter, and are thus precisely of the same form, and nearly of the same size, as the penannular rings of gold found on the cover of the cist at Alloa.[2]

Fig. 146.—Bronze Spear-head found with other articles of Bronze at Achtertyre, Elgin (11½ inches in length).

At Gospertie, in Fife, about 1822, a hoard of bronze objects was found, consisting of six spear-heads and about a dozen axe-heads. Of the whole hoard only one axe-head (which was fortunately sent to the Museum) is now known

[1] According to the analysis by Dr. Stevenson Macadam the precise proportions are:—Tin 78·66, Lead 21·34 = 100. "These proportions," he says, "represent a solder which would fuse about 365° F., whilst the plumber's *sealed solder* of the present day contains 1 of tin to 2 of lead, and fuses at 441° F.—*Proc. Soc. Antiq. Scot.*, vol. ix. p. 438.

[2] See the description and figure in the previous Lecture, p. 64.

Fig. 147.—Penannular Ring of Bronze found with other articles at Achtertyre, Elgin (actual size).

Figs. 148, 149.—Bronze Spear-heads found at Torran, near Ford, Loch Awe (12 inches and 10¼ inches in length).

to exist. It is a socketed axe-head 3¼ inches long by 2 inches broad, having a loop at one side of the socket and a double moulding passing through the loop.

In digging a ferret out of a rabbit-hole at Torran, near Ford, at the south end of Loch Awe, recently, a hoard of bronze objects was found, consisting of two spear-heads and a socketed gouge. The spear-heads (Figs. 148, 149) are of different sizes, the largest measuring 12 inches in length, and 2 inches across the widest part of the blade, the socket, which extends 3 inches beyond the base of the blade, provided with rivet-holes in the plane of the blade, and cored almost to the point of the weapon. The smaller of the two spear-heads, which is similar to the other in every respect but that of size, measures 10¼ inches in length and $2\frac{1}{16}$ inches across the widest part of the blade, but has lost a portion of the lower end of the socket. The gouge (Fig. 150) is not

Fig. 150.—Bronze Socketed Gouge, found with two Spear-heads at Torran, near Ford, Loch Awe (actual size).

unlike the modern form, except that it is socketed. It measures 3 inches in length, and is here figured of the full size. It is almost exactly like another implement of the same character found with a similar but larger hoard of tools and weapons, which is next to be described.

In trenching a gravel hillock at Monadh-mor, Killin, Perthshire, in 1868, a hoard of bronze objects was discovered. They lay all together, at a depth of about a foot beneath the surface. The articles of which the hoard was composed were as follows :—

(1) A portion of a bronze sword of small size (Fig. 151),

with leaf-shaped blade, having no rivet-holes in the handle-plate, which is furnished with a somewhat prominent midrib on both sides. The fragment measures $5\frac{3}{4}$ inches in length. (2) A spear-head (Fig. 152) $10\frac{1}{4}$ inches in length, the blade leaf-shaped, the socket projecting 3 inches beyond the base of the blade, and pierced transversely by

Fig. 151.—Part of Bronze Sword ($5\frac{3}{4}$ inches in length).

Fig. 152.—Spear-head of Bronze, ($10\frac{1}{4}$ inches in length).

a rivet-hole on either side. The socket, as usual, is continued as a prominent midrib down the centre of the blade, and cored almost to the point. (3) Two socketed axe-heads of bronze (Figs. 153, 154). The first is $2\frac{5}{8}$ inches in length, and 2 inches across the cutting face, which is semicircular, and expands considerably as it thins towards the edge. The

second is 4¼ inches in length, and 2¼ inches across the cutting face, which expands to a semicircular form; the

Fig. 153, 154.—Socketed Axes of Bronze (2⅝ and 4¼ inches in length).

socket part is long and narrow, with a squarish opening above. Each of the axes has a depressed moulding or collar underneath the rim of the socket, and is furnished

Fig. 155.—Socketed Gouge of Bronze (actual size).

with a small loop on one side. (4) A socketed gouge (Fig. 155), 2¾ inches in length. Bronze gouges are of rare occurrence in Scotland. The only other specimen known is

one which was dredged up from the bed of the river Tay before 1863, and is now also in the Museum. It is precisely

Fig. 156.—Circular Hollow Ring of Bronze and Section of Ring ($2\frac{3}{4}$ inches diameter).

of the same form and character as those here described from Torran and Killin. (5) A circular hollow ring (Fig. 156),

Fig. 157.—Penannular Ring of Bronze, with expanded ends (actual size).

similar in form to the button-like rings found with the bronze swords in Edinburgh, and at Tarves, and with spear-

heads at Inschock, near Nairn. In this case there are no loops in the concavity of the ring. It measures $2\frac{3}{4}$ inches diameter. (6) A penannular ring or bracelet of bronze (Fig. 157), $2\frac{3}{4}$ inches diameter, with slightly expanded ends. (7) Nine plain annular rings of bronze, three of which are $2\frac{1}{4}$ inches diameter; four are $1\frac{7}{8}$ inches diameter; and two are $1\frac{1}{2}$ inch diameter.

At Inschock, near Nairn, some time before 1782, a hoard of bronze objects was found, consisting of two spear-heads, each 9 inches in length, two socketed axe-heads $3\frac{1}{2}$ and $2\frac{1}{2}$ inches long, and a circular hollow ring of bronze, 3 inches diameter, similar to that found in the Killin hoard.

Fig. 158.—Spear-head of Bronze found in a Cairn at Highfield ($7\frac{1}{2}$ inches in length).

In removing a cairn at Highfield, near Dingwall, in 1781, four socketed axe-heads and two spear-heads of bronze were found laid on a flat stone and carefully covered by other stones. The larger of the two spear-heads (Fig. 158) is $7\frac{1}{2}$ inches in length, the blade leaf-shaped, with segmental perforations; the other is $4\frac{1}{2}$ inches in length, with imperforate blade. Of the axes, one is $4\frac{1}{4}$ inches in length, with an oval socket, and loop at the side, and has a band of three raised parallel lines round the collar under the rim of the socket; another of the same size has a single raised line round the collar; the other two are smaller and unornamented. The cairn in which they were found was probably sepulchral, but there is no suggestion that the hoard was a burial deposit.

At Dalduff, near Crosshill, on the estate of Sir Charles

D. Ferguson of Kilkerran, Ayrshire, in 1846, a number of socketed axe-heads and pieces of broken bronze swords were found. There is no detailed record of the composition of the hoard,[1] which was exhibited at a meeting of the Society of Antiquaries of Scotland in June 1846, but "specimens" of the articles found were then presented to the Museum, and these consist of three socketed axe-heads (Fig. 159),

Fig. 159.—Three Socketed Axe-heads found at Dalduff, Kilkerran, Ayrshire.

measuring respectively $2\frac{3}{4}$ inches in length by $1\frac{3}{4}$ inch across the cutting face, $3\frac{1}{4}$ inches by 2 inches, and $3\frac{1}{4}$ inches by $2\frac{1}{4}$ inches; two fragments of a short sword-blade with a median ridge, like that in the Killin hoard, and a caldron ring. As the workmen spoke of the objects having been found in a "pot," they had probably been deposited in a large caldron of thin beaten bronze similar to that which appears in the Duddingston hoard by its ring.[2]

[1] Dr. Macdonald has given an account of the circumstances of the finding of this hoard in the *Ayr and Wigtownshire Collections*, vol. iv. p. 50.

[2] See the figures and descriptions of similar caldrons at p. 206, *infra*.

In the island of Shuna in Argyllshire, in 1875, three bronze swords were found in digging a drain in peaty soil. They were all sticking vertically in the peat, with the points downwards, as if they had been purposely placed in that position, and not casually lost.[1]

At Corsbie Moss, in the parish of Legertwood, Berwickshire, a sword and scabbard-tip and a leaf-shaped spear-head of bronze were found in the peat within a foot or two of the surface.

At Jacksbank, in the parish of Glenbervie, in 1880, two bronze swords were found together in digging a drain at a depth of 3 feet from the surface. One of these (Fig. 160) was recovered entire, the other was broken in its removal from the soil. The entire specimen measures 25⅞ inches in length, and weighs 20¼ ounces.

At Kingarth, in Bute, three broad heavy blades, round pointed, and with slightly curved edges, each furnished with three rivets at the base of the blade for attachment to the shaft, were found in 1862. The circumstances of their discovery are not known, but the weapons themselves are in the National Museum. They vary from 10 to 13 inches in length, and are 3 inches in breadth at the base, with a slightly rounded midrib running from base to point. The position of the rivets, and the size and weight of the blades, indicate that they must have been fixed axe-wise on a short stout shaft, and not used as spear-heads or dagger-blades.

At Lugtonridge, in the parish of Beith, Ayrshire, in 1779, four or five bronze shields were discovered by some labourers cutting peats. Only one of these (Fig. 161) is preserved, and it owes its preservation to its having been

[1] At Thurston, in the parish of Whittinghame, Northumberland, in 1847, a number of bronze weapons, consisting of two swords and three spear-heads, were found "sticking in the moss with the points downwards, in a circle, about two feet below the surface."—*Proc. Soc. Antiq. Lond.*, Second Series, vol. v. p. 249.

presented to the Society of Antiquaries of London in 1791. It is of thin beaten bronze, 26¾ inches diameter, with a central boss 4⅜ inches diameter. The surface of the shield is ornamented with concentric circles of small studs in *repoussé*, with concentric ribs or ridges also hammered up from the back between the circular rows of studs. The handle is of bronze, fixed across the inner side of the boss, the grip rounded by turning the edges inwards. The handle, and a portion of the rim of the shield, the latter drawn to the actual size, are shown separate in Fig. 162.

Fig. 160.—Bronze Sword found at Jacksbank (25⅞ inches in length).

At Yetholm, in Roxburghshire, in 1837, two shields of the same character were found in digging a drain in a marshy piece of ground. One of these (Fig. 163) measures 23½ inches in diameter, and has a central boss 4 inches diameter, with a projection of 1¾ inch, the handle riveted across the central concavity of the boss. The other shield is 24 inches in diameter. Both are precisely similar in their decoration. As in the Ayrshire examples, it consists of concentric circles of small studs and intervening circles of convex ridges, both studs and ridges having been hammered up from the back. In 1870 a third shield of the same character was ploughed up in the same piece of marshy ground. It is 22½ inches in diameter, with a central boss 3½ inches in diameter.

It is to be noticed that while in all these hoards weapons

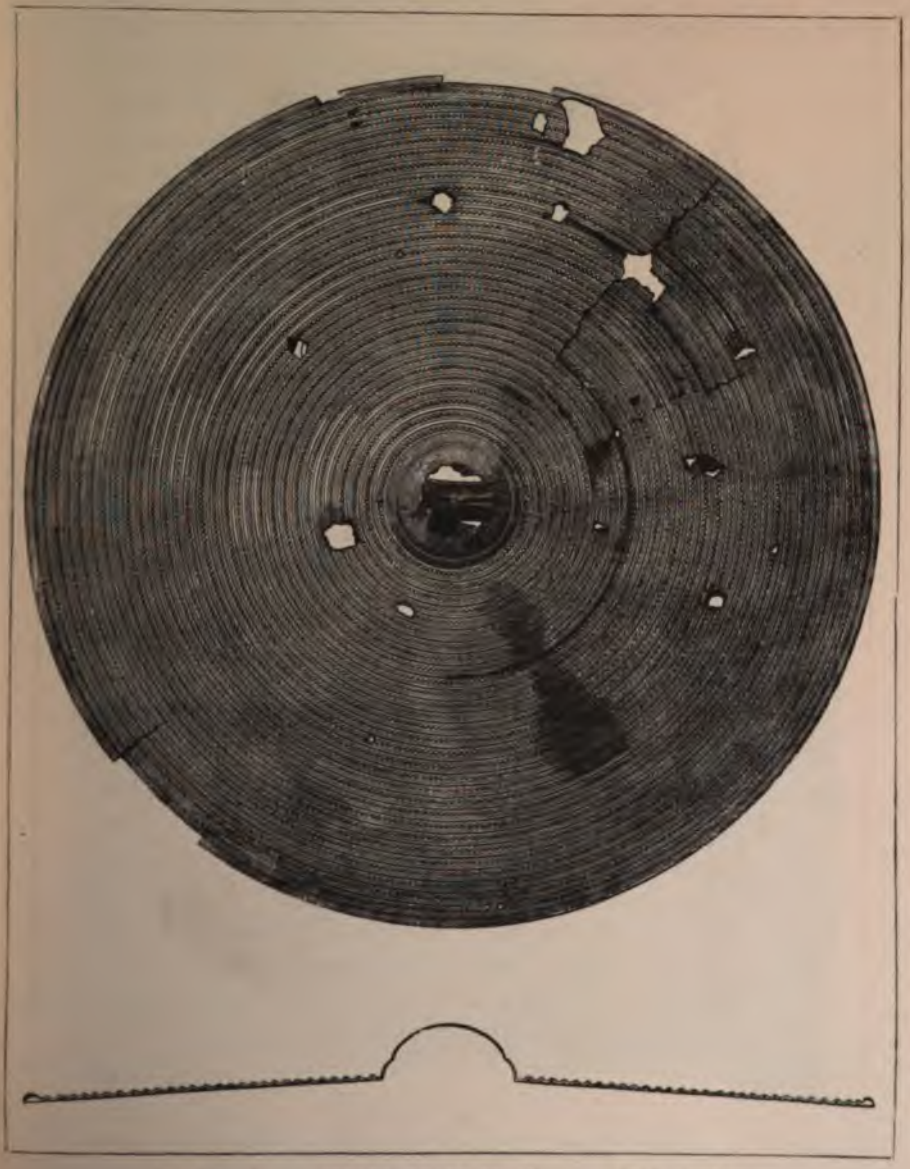


Fig. 161.—Bronze Shield found at Lugtonridge, near Beith, Ayrshire.
Front View and Section (26¾ inches in diameter).

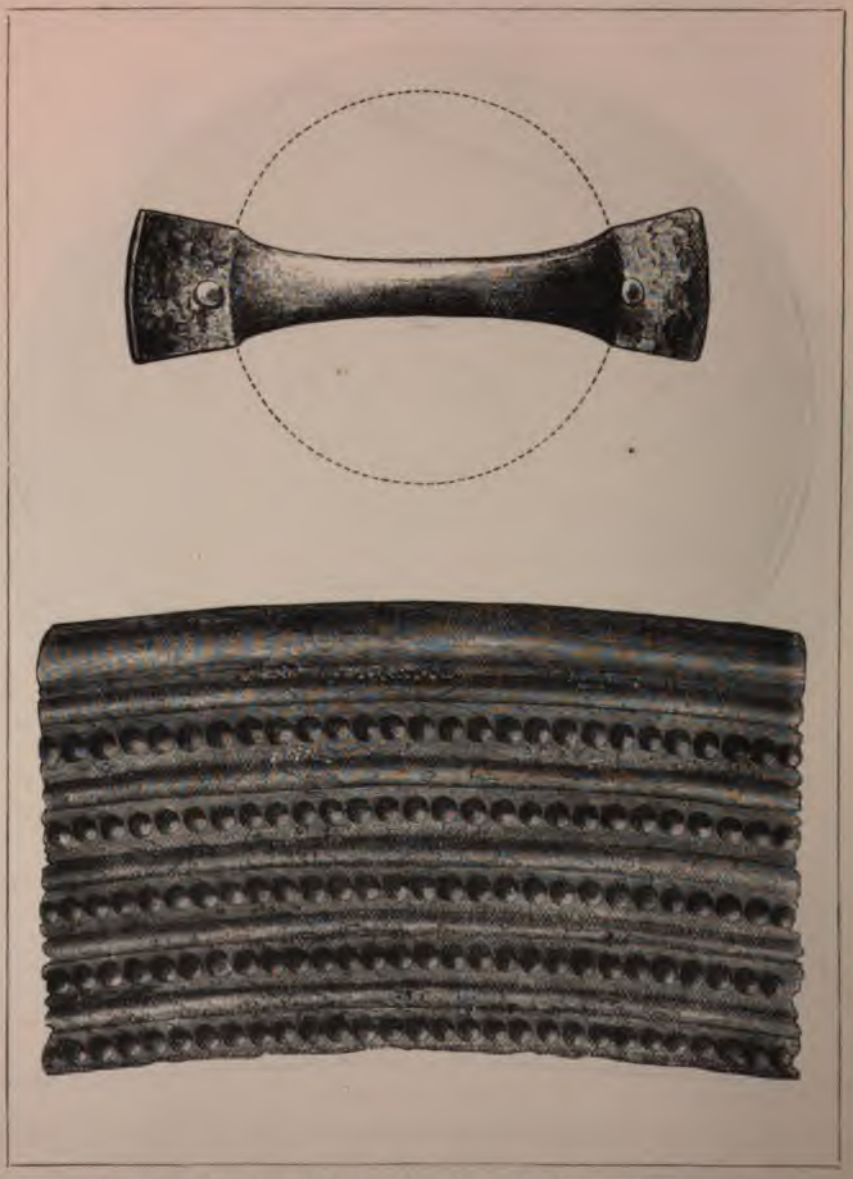


Fig. 162.—Handle and part of Outer Side and Rim of Shield found at Lugtonridge.

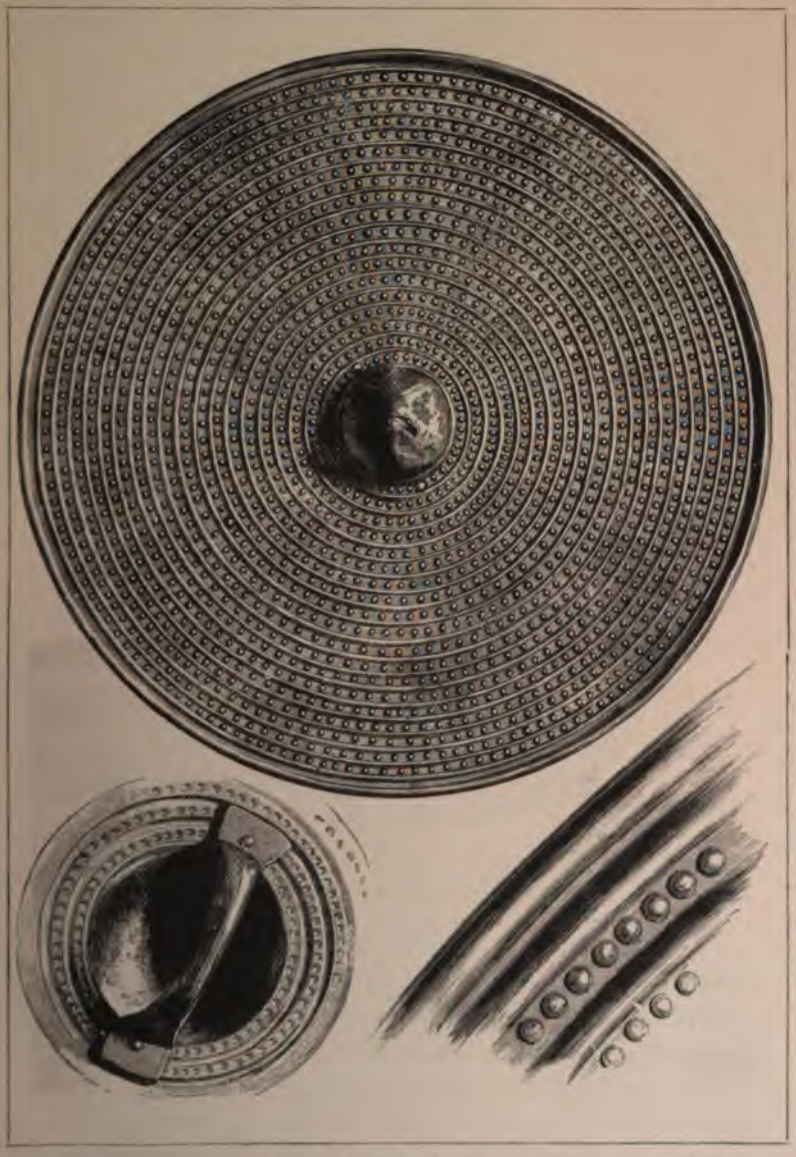


Fig. 163.—(1) Bronze Shield found at Yetholm, 23½ inches diameter; (2) View of inside of Boss and Handle; (3) Part of Rim (full size).

of war are present, there are some which contain a mixture of tools and weapons. Occasionally also there have occurred hoards which contain no warlike weapons, but consist only of tools, or tools and ornaments.

On the farm of Rehill, in the parish of Premnay, Aberdeenshire, a hoard of nine axe-heads and several penannular rings or armlets of bronze were discovered some time before 1853. One of the axe-heads and two of the armlets are in the Museum; the others are not now known to exist, and are undescribed. The axe-head which has been preserved is socketed, with a loop at the side, like those found in the Killin hoard. The armlets are also like the armlet found in the Killin hoard, but one of them presents the peculiarity of being tapered to the extremities, as shown in Fig. 164.

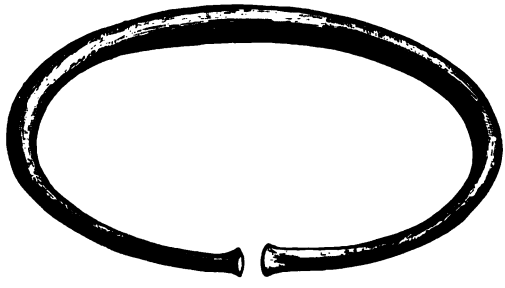


Fig. 164.—Bronze Armlet found with nine flat axe-heads at Rehill, Premnay, Aberdeenshire (2⅞ inches diameter).

At Bell's Mills, on the Water of Leith, in 1865, a small hoard of three socketed axe-heads (Fig. 165) was found. One of them is peculiar in form, having a long neck and flattened sides, and being unfurnished with a loop. The others are of the more common form, short-necked, and provided with a loop at one side of the upper part of the socket.

In digging a drain at the Castle Hill of Forfar (which

lies within the old margin of the Loch of Forfar), about

Fig. 165.—Bronze socketed Axes found near Bell's Mills, Edinburgh (3½ and 5 inches in length).

1855, a hoard of four socketed axe-heads and one spear-head was found. Three of the socketed axes are shown in

Fig. 166.—Three of the four socketed Axes of Bronze found at Forfar (3½, 4¾, and 3 inches in length).

Fig. 166. One of these is an elongated, spud-like imple-

ment, like that found at Bell's Mills, but provided with a side-loop, and having a circular socket ornamented by an encompassing band of four parallel incised lines round the neck, which immediately under the loop passes from a circular to a twelve-sided form. It measures $4\frac{3}{4}$ inches in length, by $1\frac{3}{4}$ inch in breadth at the cutting edge. Other two of the axe-heads, which are 3 and $3\frac{1}{2}$ inches in length, have wide oval sockets and a semicircular cutting edge which extends beyond the sides in recurved peaks, while the fourth, which measures 3 inches in length, has a squarish socket and flattened sides. The spear-head (Fig. 167), which is $6\frac{1}{2}$ inches in length, with a leaf-shaped blade, is ornamented with two bands of three parallel lines encircling the socket.

Fig. 167.—Bronze Spear-head found at Forfar ($6\frac{1}{2}$ inches in length).

At Poolewe, in Ross-shire, in 1877, a larger hoard was found by a labourer digging peats. They lay at a depth of six feet under the surface, and all in one spot. The hoard consisted of three socketed axes entire, the largest measuring $4\frac{1}{2}$ inches in length and the smallest $2\frac{1}{4}$ inches in length, and two of the same form, broken; a hollow ring of bronze, 2 inches diameter, pierced through both sides; a caldron ring, $3\frac{1}{4}$ inches diameter; and a penannular ring (Fig. 168) with expanding and trumpet-shaped ends. This form of penannular ring is rare in bronze, and this is the only specimen known to have occurred in Scotland.[1] It measures $2\frac{1}{4}$ inches across

[1] In Ireland, rings of this form occasionally occur in gold, ornamented with the peculiar straight-line patterns of the Bronze Age. The Poolewe hoard is described by Mr. Jolly in *Proc. Soc. Antiq. Scot.*, vol. xiv. p. 45.

the opening, the solid part of the ring being about $\frac{3}{8}$ inch thick, and the trumpet-shaped ends expanding to about 2 inches in diameter.

Fig. 168.—Penannular Ring of Bronze with expanded ends, found at Poolewe.

On the farm of Balcarry, in the parish of Old Luce, Wigtownshire, three bronze axe-heads were found together, in 1875.[1] They differ in form from these socketed examples in being unsocketed, but having recesses on either side of the central portion of the butt, which is thinned for insertion in a split shaft-end, and the edges turned over to retain the split ends of the shaft more firmly. This form of axe-head is often termed a "palstave." The largest of the Balcarry specimens (Fig. 169) measures $7\frac{1}{4}$ inches in length and $2\frac{1}{4}$ inches across the cutting face, while the smallest (Fig. 170) is $5\frac{1}{4}$ inches in length and 2 inches across the cutting face.

At Sluie, in the parish of Edinkillie, in Morayshire, some time before 1861, two flat axe-heads of bronze were found. They are neither socketed nor provided with flanges, but are simply flat solid castings, axe-like in shape, and thinning to both ends, one of which is broader than the other, and sharpened to a somewhat semicircular cutting edge.

[1] Notice of bronze implements found in Wigtownshire, by Rev. G. Wilson, *Proc. Soc. Antiq. Scot.*, vol. xiv. p. 132.

The larger of the two measures 6 inches in length, and $3\frac{1}{4}$ inches across the cutting face; the smaller (Fig. 171)

Fig. 169.—Bronze Axe, Balcarry. Front and side views. ($7\frac{1}{4}$ inches in length.)

is $5\frac{7}{8}$ inches in length, and 3 inches across the cutting face. The surfaces of both these axe-heads present a peculiar coating of metallic tin, which is probably due, as Dr.

Stevenson Macadam has suggested, to the decomposition of the bronze.[1] A large heavy triangular blade of bronze,

Fig. 170.—Bronze Axe, Balcarry. Front and side views. (5¼ inches in length.)

11 inches in length, by 3½ inches in greatest breadth, with four rivet-holes arranged round the margin of its semicircular base, was sent to the Museum along with the axe-heads, but the evidence of its having been found with them is defective.

[1] It has been also suggested that these axe-heads, and some others which present this peculiar coating of the surface, may have been purposely tinned "to protect them from the influence of the weather, and keep the surface clean and free from oxidation." The analysis of the

At Colleonard, near Banff, in 1859, seven axe-heads of the same form were found together. The largest is 6 inches in

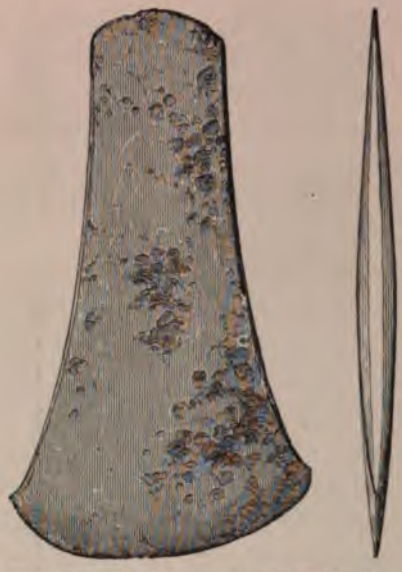


Fig. 171.—Flat Axe-head of Bronze found at Sluie, Morayshire (5⅞ inches in length).

length and 3 inches across the face. Two of them have hammer-marked ridges on both of the flat sides, following the curved outlines of the sides about ½ inch apart,

coating on the Sluie specimens, by Dr. Stevenson Macadam, exhibits a very large proportion of carbonate and hydrate of copper:—

Tin, ...	24·36	32·78
Copper, ...	15·49	18·14
Carbonate and Hydrate of Copper,	60·15	49·08
	100·00	100·00

and it seems more probable, as Dr. Macadam remarks, that the high percentage of tin may be due to the gradual rusting away of the copper of the bronze, which would leave an excess of tin on the surface. See a "Notice of Bronze Axe-heads which have apparently been tinned," by Dr. J. A. Smith, in *Proc. Soc. Antiq. Scot.*, vol. ix. p. 428; and also Evans's *Ancient Bronze Implements of Great Britain* (London, 1881), p. 56.

and three are marked all over their flat sides with indentations from the pin end of the hammer.

On the Hill of Fortrie of Balnoon, in the parish of Inverkeithny, Banffshire, at some time before 1853, a hoard of seven flat axe-heads of bronze were found. Only one of these is now known to exist, and it owes its preservation to the fact of its having been presented to the National Museum. It is of the same form as the specimen previously figured from Sluie, and almost exactly of the same size, and presents a similar coating of tin on the surface.

At Tonderghie, in the parish of Whithorn, Wigtownshire, a hoard of six flat axe-heads of bronze was found some time before 1795. None of them are now known to exist.[1]

Recently, at a place called "The Maidens," near Culzean Castle, Ayrshire, in excavating for a shipbuilding yard, a hoard of four flat axes and a penannular ring or armlet was found, in a talus of loam and gravel under a whinstone rock, about 100 yards distant from the shore, and 25 feet above the present high-water mark. The armlet, which was broken, measured $2\frac{7}{8}$ inches in diameter, with a thickness of about $\frac{1}{4}$ inch. The axes were of different sizes, the largest measuring $5\frac{1}{2}$ inches in length, and $4\frac{1}{8}$ inches across the cutting face, and the smallest (Fig. 172) $3\frac{3}{4}$ inches in length, by $1\frac{1}{2}$ inch across the cutting face. It was remarked that, while they all bore evidence of considerable usage, the largest and the smallest were not so much the worse of wear as the intermediate sizes.[2]

Comparing the different varieties of bronze objects found in the burial deposits with those that occur in the hoards

[1] An account of their discovery, with a drawing of one, which shows the characteristic form of the flat axe-head of bronze, is given in the Old Statistical Account of the parish of Whithorn.

[2] This hoard has been fully described by Dr. Munro in *Proc. Soc. Antiq. Scot.*, vol. xvii. p. 433, and also in the *Collections* of the Ayr and Wigtownshire Archæological Association.

that are not associated with burials, it is seen at once that the forms which occur in the one case are not the same as those which occur in the other. The objects associated with burials are thin flat triangular blades with rivets, thin oval or bifid blades with tangs, small pins, and large closed rings of bronze, associated with such non-metallic objects as beads and necklaces of jet or cannel coal, flint knives and arrow-heads, wrist-guards and whetstones of polished stone, and sepulchral pottery of four different forms. The hoards, on the other hand, present no admixture of non-metallic objects, and they consist mostly of bronze articles of larger size than those that are associated with burials. The forms found in the hoards are axe-heads of three varieties,—flat, flanged, and socketed; gouges, spear-heads, broad heavy halberd or dagger blades, swords, shields, harness-rings, arm-rings of penannular form, and long pins with disc-like or shield-like heads. Unless in one or two doubtful instances, there is nothing on record which conclusively connects any one of these last-mentioned forms with burial in Scotland. It is impossible in the present state of our knowledge to assign a

Fig. 172.—The smallest of the four flat Axes of Bronze found at Culzean, Ayrshire (3¾ inches in length).

reason for this. But the fact which is thus disclosed by the collection and comparison of the phenomena of the burials and of the hoards, though it may be contrary to our expectation, is not contrary to the experience of archæologists in the neighbouring areas.[1]

The most probable suggestion, by way of explanation of the absence from the burials of the forms of bronze implements that are commonly found in the hoards, is based upon the fact that these implements are all of types that evidently belong to the most advanced period of the bronze industry, such as the leaf-shaped swords, the broad heavy halberd blades, the socketed axes, and the socketed spears. It is only the plain flat axe, and the plain flat knife or dagger-blade, and small tanged blade, that are found with burials; and these do not occur in the hoards, which, as a rule, yield only swords and socketed implements and weapons. In other words, the character of the one set of implements is suggestive of the incipient stage, while the character of the other set is suggestive of the advanced or fully-developed stage of the Bronze Age industry. It follows from this that the burials represent the earlier, and the hoards the later, period of the Age of Bronze. So far as regards the burials

[1] "Socketed axes of bronze have rarely, if ever, been found with interments in barrows in Britain." "There is also this remarkable circumstance attaching to the bronze swords, viz., that there is no well-authenticated instance of their occurrence with any interments in barrows." "Not only are spear-heads (of bronze) almost, if not quite, absent from our barrows, but the skill involved in producing implements so thin and so truly cored could only have been acquired after long practice in casting."—Evans's *Ancient Bronze Weapons, etc., of Britain*, pp. 134, 273, 342. In the same manner Canon Greenwell remarks that he has been unable to find a single authentic instance of the occurrence of a bronze sword with a burial in Britain; that he has only met with three doubtful instances of socketed celts in connection with interments, and that he has been unable to obtain a single case in which a socketed spear-head has been found in true association with a burial.—*British Barrows*, pp. 44, 45.

of this later period represented by the hoards we are at present left entirely without evidence.[1]

Having thus described a considerable number of the deposits of the Bronze Age that are known to have occurred in Scotland, whether associated with burials, or simply deposited for the purpose of concealment in the soil, I now proceed to the classification of the several varieties of these objects as they are presented in the aggregate collection of Bronze Age remains.

The aggregate of objects which has thus been presented to us includes a number of varieties of arms, implements, and personal ornaments; and each of these varieties exhibits a

[1] After an exhaustive review of the phenomena of the burials in the barrows of the north-eastern area of England, Canon Greenwell says:—"The conclusion, then, at which we seem to arrive, is that the barrows in general belong to a period before bronze was in common use, and when that metal was scarce, and only manufactured into articles of a comparatively small size, such as those usually found in them, viz., the plain axe, knife-dagger, drill, and awl. Indeed, it is almost impossible to believe that if the burial-mounds were constructed after the time when swords, spear-heads, and socketed axes were abundant, none of them should have been discovered in the barrows. If these weapons had not been plentiful, we could understand how they might never have occurred in connection with burials; but from the numbers which have been found in all parts of Britain, it is evident they were very widely diffused and largely manufactured. This circumstance makes it difficult, indeed almost impossible, to refer to the same period the erection of the barrows and the fabrication and use of the weapons and implements in question. It may be asked, if the ordinary barrows are none of them the burial-places of the people who occupied the country during the highest development of the Bronze Period, where do their burial-places exist? The question certainly is one which it is not possible to answer; but the inability to offer any explanation is not sufficient to make us, in the face of what appear to be greater difficulties, accept the view that the barrows belong to that time. There are other periods during which the people must have been buried in large numbers, and yet there is scarcely a trace left of their sepulchral remains. For instance, the time which elapsed between the introduction of iron and the full occupation of Britain by the Romans was by no means a short one, and yet the burials which can be attributed to that period are but few."—*British Barrows*, p. 49.

distinctly typical form peculiar to the phase of culture we are now investigating.

Dealing first with the arms or warlike weapons, we find that they present the following varieties, viz., swords, daggers, spears, and shields. It is to be noticed that no arrow-heads of bronze appear among the articles found either in the graves or in the hoards, and that when arrow-heads are found in the burial deposits of the Bronze Age in Britain, they are invariably of flint.[1]

The sword of the Bronze Period, the finest of their weapons, is small and short, the blade leaf-shaped, and the hilt unfurnished with a guard.[2] It is therefore primarily a thrusting instead of a cutting and parrying weapon. The different specimens vary considerably in size. The second largest in the Museum (Fig. 173) comes from the island of South Uist, in the Hebrides, and measures 27 inches in

[1] Four arrow-heads of flint were found with an unburnt burial in a barrow at Woodyates, South Wilts, with which there was also a bronze dagger and pin. An arrow-head of flint was found with a burnt interment in a barrow at Wilsford, also in South Wilts, with which there was a bronze dagger and a whetstone. Both these cases are recorded by Sir Richard Colt Hoare in his work on the *Barrows of South Wilts*. In Borther Low, Derbyshire, Mr. Bateman found with an unburnt burial a flint arrow-head and a small bronze celt. Other instances of the association of arrow-heads of flint with Bronze Age burials are given by Mr. John Evans in his *Ancient Stone Implements of Great Britain*, pp. 354, 355. The same association has been observed in France. In a tumulus at Plouyé, Finisterre, twenty-four barbed arrow-heads of flint were found with a partially burnt interment, with which there were three bronze dagger-blades and three flat axes of bronze. In the tumulus of Kergourognon, Côtes-du-Nord, forty flint arrow-heads were found with six dagger-blades of bronze.—*Materiaux pour l'Histoire de l'Homme*, vol. xviii. p. 448.

[2] "Among ancient weapons of bronze, perhaps the most remarkable, both for elegance of form and for the skill displayed in their casting, are the leaf-shaped swords. The only other forms that can vie with them in these respects are the spear-heads, of which many are gracefully proportioned, while the coring of their sockets for the reception of the shafts would do credit to the most skilful modern founder."—Evans's *Ancient Bronze Implements, etc., of Britain*, p. 273.

Fig. 173.—Bronze Sword found in South Uist (27 inches in length).

Fig. 174.—Bronze Sword found in the river Tay (28½ inches in length).

length, while the largest known in Scotland (Fig. 174), which was dredged up from the bottom of the Tay near Perth, does not exceed 28½ inches in length. Another, found in the Tay near Newburgh, measures 26½ inches, and one found in the parish of Latheron in Caithness measures 25 inches in length. The blade is doubly convex in the cross-section, and the edge is formed in a peculiar manner by hammering a strip of the metal of uniform width to an extreme tenuity along each margin, and planing it flat with a whetstone. This marginal strip, which is scarcely thicker than stout writing-paper, forms an edge of uniform keenness, and varying from about $\frac{1}{8}$ to $\frac{1}{16}$ inch wide. It extends from the point along both sides of the blade to within 1 or 1½ inch of the extremity of the wings in the base of the blade, where it is always cut off short, as shown in the specimens from Wigtownshire and Keith House, Midlothian (Figs. 175, 176). Both of these have lost part of their hilt-plates, and one has the blade accidentally bent. In all these leaf-shaped swords, the blade usually attains its greatest width at about one-third of its length from the point, diminishing to its least width at about another third of its length nearer the hilt, and again increasing in width to its junction with the wings of the hilt-plate. The hilt-plate itself is pierced with rivet-holes in the wings, and usually also with rivet-holes, but occasionally with slots, in the centre of the hilt-plate, for the attachment of side-plates of bone, horn, or wood, to make up the round of the grip. As a rule, the leaf-shaped sword has had the grip of its hilt made up with convex side-plates of perishable material thus fastened to the handle-plate by rivets, and in some instances the grain of the decayed plates is still visible on the oxidised surface of the metal. In rare instances, as in the case of the sword found in Edinburgh (as formerly noticed, see Fig. 141), the hilt is formed of bronze, cast in the same mould with the blade. There is

however, a narrow rapier-shaped variety of blade, of rare occurrence in Scotland, which has no handle-plate, the whole

Fig. 175.—Bronze Sword found in Wigtownshire.

Fig. 176.—Bronze Sword found near Keith House (24½ inches in length).

hilt being made of bone, horn, or wood, and attached to the flattened base of the blade by rivets of larger size, somewhat

in the same manner as the broad flat dagger-blades were handled. The Scottish examples of these rapier-shaped blades are shorter than the leaf-shaped swords, the one here shown (Fig. 177), from Kirkoswald, Ayrshire, measuring 15 inches in length.

Fig. 177.—Bronze Rapier Sword, Kirkoswald.

Both these varieties of sword-blades were cast in moulds, presumably of stone. No sword-moulds have yet been found in Scotland, but there are in the Museum casts of the two moieties of a stone mould for casting these narrow sword-blades which were found near Chudleigh, in Devonshire. They are formed of a greenish micaceous schist, and are 24½ inches in length by 3 inches in greatest width. With them a smaller pair of moulds for a shorter blade of the same description were found. In "finishing" the castings of these blades, the surface was rubbed smooth with a stone rubber, the edges drawn down with the hammer, and planished with a whetstone.

The dagger-blades are thick and heavy in proportion to their length, and they differ from the thin flat blades of smaller size found in the graves,[1] not only in being very much larger, heavier, and less triangular and flattened in shape, but in being usually formed with a stout midrib, sometimes a mere ridge, as in the case of the dagger from Gretna (Fig. 178), at other times a central moulding, with lines on

[1] See the descriptions of these thin knife-dagger blades in the first Lecture, pp. 8, 12, 13.

either side following the outlines of the blade, as in the case of the finely-shaped and ornamented dagger from Pitkaithley, Perthshire (Fig. 179). The ornament, which forms a band

Fig. 178.—Bronze Dagger, found at Gretna, Dumfriesshire (7 inches in length).

Fig. 179.—Bronze Dagger found at Pitkaithley, Perthshire (7 inches in length).

of triangles across the base of the central moulding of this blade, is a variety which is often seen on the tall narrow urns with bulging sides and thin everted lip. In both these weapons, the rivets which attached the handle to the base of the blade are still in the rivet-holes, and in the case of that from Pitkaithley the mark of the lunated end of the handle is distinctly visible as a darker shade on the base of the blade. In these instances, and also in the case of a similar blade found at Kilrie, near Kinghorn in Fife (Fig. 180), the

attachment to the handle has been by two rivets. But in the case of the very much larger and heavier blade found at

Fig. 180.—Bronze Dagger, found at Kilrie, Fife (6¼ inches in length).

Fig. 181.—Bronze Dagger, Whiteleys, Stranraer (12½ inches in length).

Whiteleys, near Stranraer (Fig. 181), the attachment has been by four rivets, and the base of the blade is prolonged backwards. The form of this blade differs from that of the other three also in being slightly unsymmetrical with reference to its median line, and the sides are differently curved. This peculiarity, which is common to a pretty numerous class of these broad heavy bronze blades, is more clearly seen in such a blade as that shown in Fig. 182, also

found in Galloway, in which the midrib or central moulding curves considerably to one side, and the inner edge of the blade is distinctly scythe-shaped. As the base of this blade is broken, it is uncertain whether the number of rivets may have been three or four, but it is obvious that a blade of such size and weight, with a base of such excessive width, could not have been efficiently hafted by the usual mode of attachment to a handle set in the plane of the blade. Bronze blades of this character have been found on the Continent, mounted axe-wise in short cylindrical handles of bronze. Lindenschmidt has figured several of these from different parts of Central Germany, of which the specimen here shown (Fig. 183), from Welbsleben in Saxony, is a typical example. This mode of fixing these broad heavy blades at right angles to the shaft is suggested by the notice of one of the Scottish examples of this type,

Fig. 182.—Bronze Blade found in Galloway (9 inches in length).

11 inches in length by 3½ inches in breadth at the base of the blade, which is pierced with five rivet-holes.

Fig. 183.—Bronze Age Halberd, from Welbsleben, near Mansfeld, Saxony (27½ inches in length).

It is described as having been found in Portmoak Moss in 1826, "with remains of the handle strengthened by a cross-piece of bronze."[1] These "halberd-blades," as Mr. Evans has styled them, are frequently found of such dimensions as are clearly incompatible with the dagger-like method of hafting and use, the largest in the National Museum being 14¾ inches in length by 4 inches in

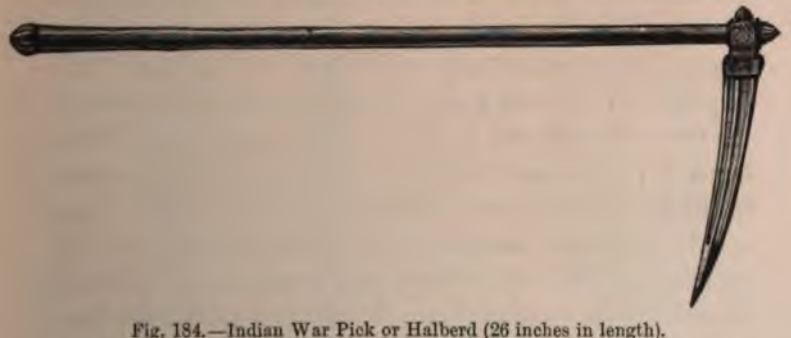


Fig. 184.—Indian War Pick or Halberd (26 inches in length).

breadth at the butt. Steel blades of somewhat similar form, though smaller in size, are still mounted axe-wise on iron handles in India, as shown by a specimen from Delhi, now

[1] MS. Communications to the Society of Antiquaries of Scotland.—Letter by Lieut.-Col. George Miller, 1829.

in the Museum (Fig. 184). There is a variety of triangular blade with thickened midrib, which, instead of being attached to the handle by rivets passing through the base of the blade itself, has a single rivet-hole in the end of a long narrow tang. They are occasionally found in England, and more rarely in Ireland, but I have only seen one example found in Scotland (Fig. 185). It was turned up by a labourer digging drains in Whitehaugh Moss, near Muirkirk, in Ayrshire. It measures 10½ inches in length, and 2 inches across the base of the blade, from which a narrow tang projects fully 1½ inch, pierced by a large rivet-hole close to the end. The blade has a prominent midrib with parallel flutings on either side.[1] These blades appear to be more allied to the dagger or halberd-blades already described, than to the spear-heads, although, as Mr. Evans remarks, it is hard to speak with any degree of confidence on this point.

The spear-head of the Bronze Age is usually a socketed weapon, always unbarbed, and often leaf-shaped; but the variation in the length and the curvature of the outlines of the blade is extreme. The largest example in the Museum, from Denhead, near Coupar-Angus (Fig. 186), is 19 inches in length. It is exceedingly graceful in form, and the skill displayed in its design and production would do credit to the most accomplished moulder of the present day. These larger blades are frequently pierced with segmental apertures in the sides, which have been formed in the casting. These openings not only economise the metal, and diminish the weight of the weapon, but also add greatly to the grace and elegance of its peculiar form. The typical leaf-shaped form, with plain unpierced blade, is seen in the examples already figured and described as occurring in the hoards found in

[1] "Ancient Bronze Implements of Ayrshire," by James Macdonald, LL.D., in *Archæological Collections of the Ayr and Wigtownshire Association*, vol. iv. p. 53.

Fig. 185.—Tanged Blade of Bronze from Whitehaugh, Ayrshire (10½ inches in length).

Fig. 186.—Bronze Spear-head found near Den-head, Coupar-Angus (19 inches in length).

Skye, and at Achtertyre, Torran, and Killin.[1] These are all provided with rivet-holes in the sockets, set in the plane of the blade, but at some distance below its base. Another variety has the base of the blade pierced by loop-like openings, as shown in the examples from Barhullion, Wigtownshire, and Belhaven, East Lothian (Figs. 187, 188). These are both

Fig. 187.—Bronze Spear-head, Barhullion (15¼ inches in length).

Fig. 188.—Bronze Spear-head found near Belhaven (15½ inches in length).

of large size, exceeding 15 inches in length, and their weight would have been unsuitable for long-shafted weapons, had not the metal been thin and the sockets cored almost to

[1] See the figures of these spear-heads on pp. 145, 147, 148, 150.

the point of the weapon. In the specimens from Crawford, Lanarkshire, and Linton, Roxburghshire (Figs. 189, 190),

Fig. 189.—Bronze Spear-head, Crawford, Lanarkshire (8¼ inches in length).

Fig. 190.—Bronze Spear-head, Linton, Roxburghshire (8 inches in length).

there is a tendency to the lozenge form in the blade, and the sockets widen more suddenly below the blade instead of tapering regularly from the point of the weapon to the butt. In the example from Merton Hall, Wigtownshire (Fig. 191), the blade is ribbed on either side of the socket, and the loops are prolonged below the base of the blade so as to become partially free. In the specimen (Fig. 192) shown beside it (the locality of which is unfortunately unknown), the blade is slightly ribbed and more lozenge-shaped, and the loops stand free on the socket half-way between the base of the blade and the butt of the weapon. As there are usually no rivet-holes in the sockets of these looped spear-heads, the inference is that the loops were intended to secure the weapon

to its shaft by cords passing through them. Such loops were

Fig. 191.—Bronze Spear-head, Merton Hall (9½ inches in length).

Fig. 192.—Bronze Spear-head, locality unknown (9 inches in length).

not however confined to the larger sizes of spear-heads. A beautiful example with fluted blade (Fig. 193), found in Lanarkshire, has the loops low down on the socket, which is also ornamented with bands of parallel lines. In the specimen from Craigton, Kinross (Fig. 194), we have an example of the variety with elongated socket and narrow leaf-shaped blade. In that from Dean Water,

Fig. 193.—Bronze Spear-head found in Lanarkshire (5½ inches in length).

Forfarshire (Fig. 195), the blade is more triangular, the socket shorter and wider, and compressed laterally, and both blade and socket are enriched with elegantly effective ornamentation.

Fig. 194.—Bronze Spear-head, Craigton (6¼ inches in length).

Fig. 195.—Bronze Spear-head found at Dean Water, Forfarshire (5¼ inches in length).

These spear-heads, like the sword and dagger blades, were cast in moulds of stone. Examples of such moulds have been occasionally found in Scotland, and they are more common in Ireland. Two stone moulds for looped spear-heads were found together in reclaiming land near Campbel-

town, Argyllshire.[1] The larger of the two moulds, of which one moiety is here figured (Fig. 196), is 7 inches in length by 1¾ inch in breadth. The two halves of this mould are exactly alike, and are both formed of a dark-coloured serpentine. There are no holes in the sides by which they could be pinned or dowelled together, and the probability is that they were bound together with a thong lashed round the outside of the mould in casting. The smaller mould (Fig. 197) is formed of the same dark-coloured serpentine, and measures only 4½ inches in length by 2 inches in breadth at the wider end. In this case the two halves or moieties of the mould are not alike. The whole thickness of the blade and loops of the spear are cut out of the one side of the mould, while the other has merely the midrib cut on it, "and the rest of that side of the mould is gently bevelled towards the edges, the result of which simple plan is that when the two sides are laid together a perfect mould is made—the two sides of the casting being almost exactly alike, and less labour being thus required in forming an outline exactly alike on both sides of the stone matrix." Nothing in connection with the technical processes of casting is more remarkable than the manner in which these bronze spear-heads have their sockets

Fig. 196.—Half of a Stone Mould for casting Bronze Spear-heads (7 inches in length).

[1] Two polished stone axe-heads were found at the same time, apparently in association with these moulds, for articles of bronze.—*Proc. Soc. Antiq. Scot.*, vol. vi. p. 48.

cored throughout the whole length of the weapon, often almost to within an inch of the point. In the case of a fine

Fig. 197.—Both halves of a Stone Mould for casting Bronze Spear-heads (4½ inches in length).

stone mould found recently at Croglin, in Cumberland, Dr. Taylor has shown, from the presence of a matrix for a long, slender, and conical object on the back of the stone, that cores of metal were used for the larger spear-heads in coring the lengthened socket and midrib. "This custom," he says, "was probably followed on account of the difficulty of steadying a long slender core of loam, and possibly from a knowledge that a metal core toughens or hardens, or (as the foundry-men say) chills the casting."[1]

The shields, as we have seen,[2] are circular, formed of a thin plate of beaten bronze, ornamented with concentric ribs and rows of small bosses or studs between. They are not intended for use on the arm, like the heavier shields of later

[1] See an interesting paper on this subject by Dr. M. W. Taylor in *Proc. Soc. Antiq. Scot.*, vol. xvi. p. 103.

[2] See the descriptions of those found at Beith and Yetholm, pp. 157, 159.

times, but were held in the left hand by a single handle riveted across the hollow of the central boss.

There is but one specimen of a war-axe of bronze known in Scotland (Fig. 198). It is peculiar in form and ornamentation, and though the material of which it is composed does not differ in composition from the bronze of which these other

Fig. 198.—Bronze Battle-Axe found in a Morass at Bannockburn in 1785. (Size, 8¾ inches in length. Weight, 4 lbs. avoir.)

weapons are made, it probably belongs to a somewhat later time. I notice it here because it is a war-axe of bronze—a weapon of which we have no other example,—the axes of the Bronze Age proper possessing none of the characteristics which differentiate this one so completely from the form of

the axe which is merely a tool. It is a solid casting of bronze, $8\frac{3}{4}$ inches in length, and $4\frac{5}{8}$ inches in greatest width across the crescentic cutting face. The socket for the shaft is $1\frac{7}{8}$ inch in diameter, with an opening of $1\frac{1}{4}$ inch diameter, and pierced on opposite sides by rivet-holes $\frac{3}{8}$ inch in diameter. The bases of the shaft-socket, and the conical projections on the front and sides, are encircled by a rope-moulding — an ornament which belongs rather to the Iron Age than to the Age of Bronze. The weight of the weapon is 4 lbs. It was found in a peat-moss near Bannockburn, Stirlingshire, in 1785.

Fig. 199.—Trumpet found at Coilsfield, Tarbolton, Ayrshire (25 inches in length).

War-trumpets of bronze, which are more common in Ireland and Denmark, are also represented in Scotland by a single specimen (Fig. 199), found some time before 1654 on the estate of Coilsfield, in the parish of Tarbolton, Ayrshire, and since that time preserved in the mansion-house there. It measures 25 inches in length, and nearly 4 inches

across the aperture at the wide end, and has two loops for suspension on the inner side of its curvature. It is cast in bronze, probably in two pieces, the junction being concealed by the band near the middle of the instrument. The bronze of which it is composed consists, according to the analysis of Dr. Stevenson Macadam, of 90·26 parts of copper to 9·61 of tin.

Having thus described the several varieties of warlike weapons which are presented in the aggregate collection of Bronze Age remains, we now turn to those objects which present the characteristics of useful tools and implements for ordinary purposes of every-day work.

Of these the simplest, and apparently also the earliest (if we judge from its sepulchral associations), is the flat and imperforate axe-head of bronze, like that here shown (Fig. 200), from Innermessan, parish of Inch, Wigtownshire. It is a simple triangular wedge of metal, $6\frac{3}{8}$ inches in length, sharpened to a segmental cutting edge at the broad end, which measures 3 inches across, and thinned at the butt to an edge less sharp for insertion into the knobbed end of the handle, probably in the same manner as the natives of several parts of Africa still haft thin flat triangular and imperforate axe-heads of iron (Fig. 201). These flat axe-heads of bronze vary greatly in size, although the larger sizes are comparatively of very much rarer occurrence than the more handy sizes, which constitute the bulk of the general

Fig. 200.—Bronze Axe found at Innermessan ($6\frac{3}{8}$ inches in length).

collection. The largest known in Scotland (Fig. 202), and probably also the largest ever found in Britain,

Fig. 201.—Iron Hatchet in its handle, from the Gaboon (18 inches in length).

is in our National Museum. It measures $13\frac{5}{8}$ inches in length, 9 inches across the cutting face, with a tang-like prolongation of the butt-end of less than 2 inches in width. It is thin in proportion to its size, being nowhere more than $\frac{5}{8}$ inch in thickness, and its weight is 5 lbs. 7 ozs. This extraordinary implement was found in digging a drain on the farm of Lawhead, on the south side of the Pentland Hills, in Midlothian. The largest implement of the same form in the Dublin Collection measures $12\frac{1}{2}$ inches in length, and $8\frac{1}{2}$ inches across the cutting face, its weight being 4 lbs. 14 ozs. It is of course possible that such exceptionally large-sized inplements as these may have been used as battle-axes, and there are circumstances of association in some cases of the occurrence of similar implements in burial deposits, which seem to suggest their use as weapons. In a barrow at Butterwick, in the East Riding of Yorkshire, Canon Greenwell found one of these flat axe-heads deposited with an unburnt body. The axe-head had evidently been fixed into a solid handle of wood, to the depth of 2 inches. The handle, although completely decayed, could be plainly traced, and,

to all appearance, the weapon had been carried suspended from the waist. But the extreme simplicity of their form,

Fig. 202.—Bronze Axe, found at Lawhead, on the Pentland Hills, Edinburghshire (13⅝ inches in length, and weighing 5 lbs. 7 ozs.).

the general absence of decoration, and the obvious wear and tear of the handier-sized implements, seem rather to imply that their more general use was that of simple tools. These handier-sized implements in general range from about 5 inches to 7 inches in length, with a breadth across the cutting face of 3 to 3½ inches. Many of them have their cutting edges unequally worn by use, or wasted away by repeated sharpening. They seem to have been cast in open

moulds of stone, such as those shown in Fig. 203, the mould being formed by a simple depression of the shape

Fig. 203.—Stone Moulds for Flat Bronze Axes (10½ inches in length).

and thickness of the implement hollowed in the surface of a water-worn boulder. Some appear to have received little or no finishing by the hammer after their removal from the mould; others have their sides rounded, or hammered into longitudinal facets. Occasionally they are hammer-marked over the whole surface by way of ornament. More rarely the ornamentation takes the form of a series of punch-marks, obliquely opposed to each other, and arranged in parallel rows, as in the large-sized example from the neighbourhood of Nairn (Fig. 204). Sometimes the hammering of the sides has been continued so as to produce flanges more or less pronounced, thus forming a transition to the variety in which the flanges have been formed in the mould. A slightly flanged example (Fig. 205), from the Moss of Cree, Wigtownshire, measures 5 inches in length by 2 inches in greatest width across the cutting face, and $\frac{5}{8}$ inch in greatest thickness. Another of the slightly flanged specimens (Fig. 206), found at Greenlees, Berwickshire, is ornamented

by concentric segmental bands punched in on the flat faces of the implement, and the sides have been worked into a

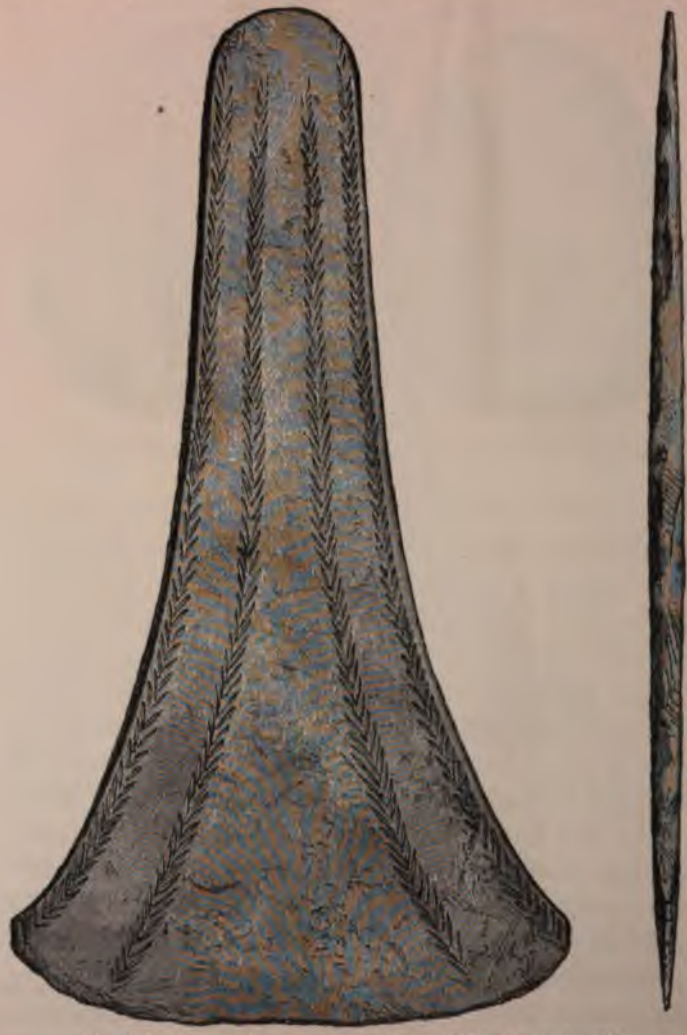


Fig. 204.—Bronze Axe found near Nairn (10¾ inches in length).

series of oblique flutings. A similar ornamentation appears on the sides of the specimen from Applegarth, Dumfries-

Fig. 205.—Bronze Axe with slight flanges found in the Moss of Cree (5 inches in length).

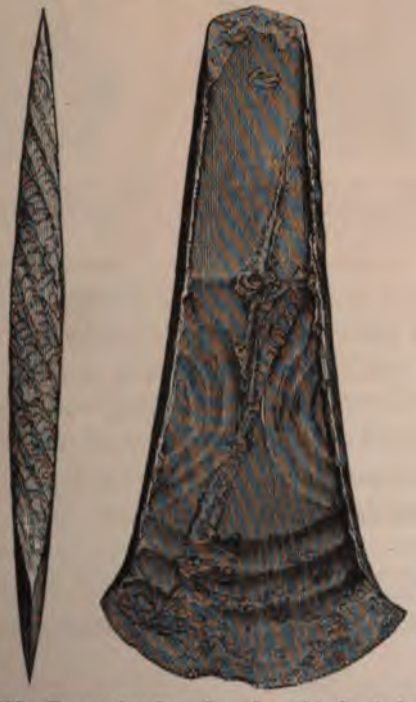


Fig. 206.—Bronze Axe from Greenlees (7 inches in length).

shire (Fig. 207). It is however more deeply flanged, and the upper part of the depression between the flanges provided with a transverse stop-ridge, the use of which was to prevent the butt of the implement from being driven up into the split end of the handle. These flanged implements

Fig. 207.—Bronze Axe from Applegarth (5¼ inches in length).

Fig. 208.—Bronze Axe found at Dams, Balbirnie (4¾ inches in length).

when used as axes or adzes must necessarily have been handled in the split end of a forked or kneed branch, the divided ends being adjusted to fit the hollow between the flanges, and firmly fastened with a binding of thongs.[1] An axe-head of this variety, with flanges and a curved stop-ridge, found at Dams, on the estate of Balbirnie, in Fife (Fig. 208), is ornamented on the sides by a pattern of deeply sunk lines, meeting each other obliquely in the central line.

[1] Such haftings of these implements have been discovered in various parts of the Continent. See Mr. Evans's chapter on "Methods of Hafting," in *Ancient Bronze Implements, etc., of Great Britain and Ireland.*

The flanges are often developed laterally until they present an oval or lozenge-shaped form in the side view, as in the examples from Largs and West Glenbuck, Ayrshire (Figs. 209, 210), and these lateral wings are occasionally turned

Fig. 209.—Flanged Axe from Largs, Ayrshire (5½ inches in length).

Fig. 210.—Flanged Axe from West Glenbuck, Muirkirk, Ayrshire (6 inches in length).

over so as to enclose the split ends of the handle more firmly. The stop-ridge also in such cases frequently assumes a development in proportion to the depth of the wings, and unites with their lower margins so as to form a kind of side pockets for the reception of the split ends of the hafting.[1] In these examples the middle portion of the butt between the wings is often thinned, and the part below the stop-ridge thickened, and occasionally a loop is added on the side for the attachment of a thong. But the

[1] See the Balcarry axes (Figs. 169, 170), pp. 164, 165.

most common variety of bronze axe-head in Scotland is that which is cast with a tapering socket in the butt-end for the reception of a crooked or L-shaped handle, and having a loop on one side, presumably for fastening it to the shaft by a cord. These socketed axe-heads, of which a typical example is shown in Fig. 211, found at Strath, Skye, are usually shorter than the flanged or winged variety, and narrower in the blade than the flat variety. The socket is generally wedge-shaped, with an opening of oval or four-sided outline, the sides being slightly curved. There is usually a slight moulding or collar round the upper part of the socket above the loop, which is placed on one side. The sides expand with a greater or less curvature to meet the curve of the cutting edge. The commonest size is from 3 to 4 inches in length, with a breadth across the cutting face of $1\frac{1}{2}$ to $2\frac{1}{2}$ inches. Occasionally they are ornamented with raised lines on the upper part of their flattest sides, and sometimes with lines terminating in single or concentric circles with central dots, as in the example from Knockandmaize, Wigtownshire (Fig. 212). These axe-heads were cast in stone moulds of two moieties, dowelled together, and cored for the socket. The core in some instances has not been completely extracted from the socket, and is thus seen to have been formed of clay. The two halves of a stone mould for casting socketed axe-heads of bronze, found at Rosskeen, in Ross-shire, are represented in Fig. 213. Speaking of the different varieties of form assumed by this advanced

Fig. 211.—Bronze Socketed Axe found at Strath, Skye (3⅞ inches in length).

Fig. 212.—Socketed Axe-head, Knockandmaize (5¼ inches in length).

Fig. 213.—Stone Mould for socketed Axe-heads of Bronze (6 inches in length).

type of bronze implement, Mr. Evans remarks that "those found in England for the most part differ from those found in Ireland, and some few types appear to be peculiar to Scotland. Traces of continental influence are, as might have been expected, most evident in the forms found in the southern counties of England, and are hardly, if at all, perceptible in those from Ireland and Scotland. Although therefore the first socketed axe-heads in Britain were doubtless of foreign origin, there was no regular importation of them for use over the whole country, but the fashion of making them spread through local foundries, and different varieties of pattern originated in various centres, and were adopted over larger or smaller areas, as they happened to commend themselves to the taste of the bronze-using public."[1]

The difference between the axes and the chisels of the Bronze Age is more in the manner of hafting and of use than in the form of the implement itself. The flat axe-head, reduced in breadth, and prolonged to a tang-like extremity at the butt-end, produces a chisel like that found at Low Torrs, Glenluce, Wigtownshire (Fig. 214). The flanged axe-head similarly attenuated becomes a chisel like that from Burreldale Moss, Aberdeenshire (Fig. 215). A tanged form of chisel with a cross-stop below the tang (Fig. 216) is also in the Museum, but it is uncertain in what particular part of Scotland it was found. The socketed axe-head occasionally assumes a chisel-like form, like the example (Fig. 217) from Kingoldrum, Forfarshire, and when more prolonged in the neck, and deprived of its loop, it becomes a chisel like that found at Bell's Mills, Midlothian.[2] The gouges, on the other hand, more closely resemble the modern implement. Two of these have already been figured in their association

[1] *Ancient Bronze Implements, etc., of Great Britain and Ireland*, by John Evans, D.C.L., etc., p. 143.

[2] The central example in Fig. 165, p. 161.

Fig. 214.—Bronze Chisel, Low Torrs, Glenluce (4¼ inches in length).

Fig. 215. — Flanged Chisel from Burreldale Moss (4 inches in length).

Fig. 216.—Tanged Chisel (locality unknown), (5 inches in length).

Fig. 217.—Bronze Socketed Chisel from Kingoldrum (4⅞ inches in length).

Fig. 218. — Bronze Gouge from the Tay (3 inches in length).

with the hoards of bronze implements of which they formed part.[1] A third example (Fig. 218), which was dredged up from the bed of the river Tay, exhibits the normal characteristics of the implement.

Awls, needles, and fish-hooks of bronze (Fig. 219) have also occasionally been found in Scotland, but not as yet in such associations as to demonstrate with certainty their attribution to the Bronze Age. I have seen one instance of a socketed knife, like those of Ireland, which was said to have been found with other objects of bronze in Aberdeenshire. The sickle is the only agricultural implement of bronze which has yet been discovered in Scotland. These sickles possess a peculiar interest, inasmuch as their presence undoubtedly implies the practice of agriculture, and the use of many other implements of whose existence we have no direct evidence. No quern, for instance, or other implement for grinding grain, or whorl for spinning wool, has yet been found in Scotland in associations which certainly assign it to the Bronze Age, although the absence of the evidence does not imply that no such implements were then in use. Of the two sickles that are known in Scotland, one was found in Aberdeenshire, and the other dredged up from the Tay. The first-mentioned example (Fig. 220), which was found at Edengerach, in the parish of Premnay, Aberdeenshire, consists of a curved tapering blade set at right angles

Fig. 219. — Bronze Fish-hooks, Glenluce, Wigtownshire (actual size).

[1] See the descriptions of the hoards of bronze implements found at Killin and at Torran, near Ford, at the south end of Loch Awe, pp. 149, 151.

to the end of an oval socket. The blade seems to have been upwards of 4 inches in length, but is now imperfect. The cutting edge is broken away, and the inferior end of the

Fig. 220.—Bronze Sickle found at Edengerach, Premnay, Aberdeenshire (Blade 4½ inches long).

socket is also incomplete. The blade has been strengthened by a projecting midrib, extending from the junction with

Fig. 221.—Bronze Sickle found in the Tay, near Errol, Perthshire (Blade 6¼ inches long along its upper margin).

the socket to the point. The second (Fig. 221), which is preserved in the Museum of the Literary and Antiquarian

Society of Perth, was dredged up from the river Tay, near Errol, in 1840. It is somewhat larger in the blade and shorter in the socket than the Aberdeenshire specimen. The blade measures 6 inches in length, by $1\frac{3}{8}$ inch in breadth, terminating in a broadly rounded point. The socket is only $1\frac{3}{4}$ inch in length, and $\frac{3}{4}$ inch diameter. It is furnished with small rivet-holes on opposite sides at the distance of $\frac{1}{2}$ inch from the opening. Instead of being strengthened by a midrib, as in the former instance, the blade is fluted in four shallow grooves, following the marginal outlines.[1] These socketed sickles are peculiar to the British Islands and the northern part of France. The sickle-blades usually found in other parts of the Continent were attached to the handles by rivets. From the small size of the blades, it seems probable that the process of reaping differed from the modern custom of cutting the straw close to the roots, and consisted simply in cutting the tops off the straw close under the ears. No moulds for casting these bronze sickles have yet been found in Britain.

Bronze hammers have not been found in Scotland, and but one example of the anvil of the Bronze Age (Fig. 222), has yet been discovered. It was found somewhere near the Kyle of Oykel, in Sutherlandshire, and is now in the Museum at Dunrobin. Like the continental examples, it is of small size as compared with the modern anvil, and adapted for being used in two positions, according as one or other of the pointed ends was fixed in the stock. This specimen is unfortunately broken in both points, and now measures less than 4 inches in extreme length, weighing $10\frac{1}{2}$ ounces. The oval top of the anvil measures 2 inches by $1\frac{1}{2}$ inch. In the other

[1] The Statistical Account of Sutherlandshire mentions the finding of a bronze instrument in cutting peats at Ledberg in 1790, which the Bishop of Derry, to whom it was given, pronounced to be a Druidical pruning-hook. The probability is that it was one of these bronze sickles.

position the top of the anvil presents a series of swages of different widths and depths, and a small circular hole pierces the centre of the implement. The alloy of which it is composed is nearly 70½ parts of copper to 26½ of tin.

Fig. 222.—Bronze Anvil found in Sutherland (4 inches in length).

Large caldrons formed of thin bronze plates riveted together have already been mentioned as having been found in association with leaf-shaped swords and socketed axe-heads of bronze.[1] They have been also found in association with implements of iron, and from this circumstance it is to be inferred that they belong to the closing period of the Bronze Age. One (Fig. 223) found imbedded in the mud at the bottom of Carlingwark Loch, in the parish of Kelton, Kirkcudbrightshire, contained a large quantity of armourer's tools, such as hammers, chisels, saws, etc., of iron, and some bronze ornaments. It measures 25 inches in its greatest diameter, and 18 inches in depth, but has lost the rim and handles. One found in the Moss of Kincardine, Stirlingshire, in 1768 (Fig. 224), measures 25 inches in diameter and

[1] In the Loch of Duddingston, p. 143 ; at Kilkerran, Ayrshire, p. 154; at Poolewe, Ross-shire, p. 162.

Fig. 223.—Bronze Caldron found in Carlingwark Loch (25 inches diameter).

Fig. 224.—Bronze Caldron found in the Moss of Kincardine, Stirlingshire (25 inches diameter).

18 inches in depth. It is more globular in shape, and still possesses the rim, though it wants the handles. A beautifully-made caldron of this description (Fig. 225) was bequeathed to the Museum by the late Mr. Archibald Leckie

Fig. 225.—Bronze Caldron from the West of Scotland (23 inches diameter).

of Paisley, but beyond the fact that it is believed to have been found somewhere in the west of Scotland, nothing is known of the place of its discovery. It measures 23 inches in greatest diameter, and 13 inches in depth, the width across the mouth being 15 inches, and the rings at the sides 4½ inches diameter. It is made of a bottom piece and four bands of thin bronze, each 3 inches in width, riveted together, the rivets having conical heads. These caldrons, of globular or spheroidal shape, with peculiarly constructed rims and ring handles, have hitherto been found only in Scotland and Ireland.

With these varieties of weapons and implements there are occasionally associated certain peculiar forms of personal ornaments. These have been already described in so far as they have been found in association with burials. They consist principally of necklaces of jet and amber, buttons of jet or of bronze, pins of bronze with shield-like heads, and rings and penannular armlets of solid bronze.[1] The absence of brooches, and the comparative infrequency of surface decoration, brings this group of ornaments into striking contrast with the group which is characteristic of the Iron Age, as described in detail in the previous series of Lectures. This contrast is still more strikingly exemplified in the entire absence of silver from the Bronze Age group and the abundance and massiveness of the personal ornaments of gold. They have been found not only associated with interments,[2] but still more frequently by casually occurring discoveries of hoards of gold ornaments or single articles of gold imbedded in the soil. The difficulty of obtaining information with regard to the discovery and circumstances of association of these gold objects is almost insuperable. Concealment of the discovery is usually the first thought of the finders, and though in disposing of the objects they may be obliged to make known the fact of their discovery, the precise locality and circumstances are seldom divulged.[3]

In 1856 a hoard of gold ornaments was found in a moss

[1] See the descriptions of these ornaments at pp. 53-60.

[2] The Gold Ornaments found in association with interments have been described in the First Lecture, pp. 61-68.

[3] It cannot be too widely known that though the Crown has the right to all articles of "Treasure-Trove," or objects which originally have been some one's personal property, but now have no owner, yet the person finding such ownerless objects, on delivering them up to the Sheriff, or to the Queen's Remembrancer in Exchequer, is entitled to receive in compensation the intrinsic value of the objects. In all cases in which the objects are thus delivered up by the finders on behalf of the Crown, the value is promptly paid to them.

somewhere in the West Highlands. The circumstances of the discovery were never known, but the objects, or such of them as had passed into the possession of a jeweller, were acquired by Mr. P. Denny of Dumbarton, and by him presented to the National Museum. The objects thus recovered and preserved consist of two penannular armlets

Fig. 226.—Gold Armlet found in the West Highlands (actual size).

(Fig. 226) and a curiously formed penannular disc, the precise purpose of which is not obvious. The armlets are solid cylindrical rods of gold, bent to a slightly elliptical form, and terminating in slightly expanded extremities. The rods of which they are formed are about $\frac{3}{16}$ inch in diameter; the armlets measure fully $2\frac{3}{4}$ inches in the longest diameter, the heaviest weighing 19 dwts. 6 grs., and the lightest 17 dwts. 18 grs. The circular penannular disc found with them (Fig. 227) is of the same form as that found with a bronze sword at Gogar, in Midlothian, which has been already described.[1] It is a penannular ring, triangular in section

[1] See the description of this hoard at p. 144.

made of thin gold plates fastened together by the edges, the edge of one plate being rolled over the edge of the other plate, which impinges upon it, and the whole finished by the hammer. It measures $1\frac{7}{8}$ inch in diameter by $\frac{5}{8}$ inch in depth at the centre, the weight being 11 dwts. This peculiarly formed object is not known in any other metal than gold. It has occurred occasionally in England, and more frequently in Ireland, but I know of no example on the continent of Europe.

Fig. 227.—Gold Ornament found in the West Highlands ($1\frac{7}{8}$ inch in diameter).

A much more massive armlet, formed of a solid rod of gold bent to a slightly elliptical form, and with very slight expansions at the terminations, was found at Bonnyside, in Stirlingshire, in 1852. The circumstances of the discovery are unknown, but the armlet was recovered by the Exchequer, and is now in the National Museum. The armlet, which is nearly circular, measures $2\frac{5}{8}$ inches across the interior diameter, the thickness of the cylindrical rod of which it is composed being $\frac{3}{8}$ inch. Its weight is 6 ozs. 10 dwts. 6 grs.

Four similar armlets of solid rods of gold, bent to an elliptical form with slightly expanded extremities, were found in digging a drain at Ormidale, near Brodick, in the island of Arran, in 1864. The circumstances of the discovery are not more fully known, but the armlets were recovered by the Exchequer, and are now in the National Museum. They vary in size from $2\frac{1}{2}$ inches to 3 inches across the opening in their longest diameter, and their weights are respectively 484 grs., 394 grs., 355 grs., and 210 grs.

Five similar armlets, found in or about the year 1845, in digging a drain in the neighbourhood of an eminence called the Gallow Hill, lying between Tarry Mills and Marywell village, in the parish of St. Vigeans, Forfarshire, were sold to a pedlar as "old drawer-handles," and probably cut down and melted.

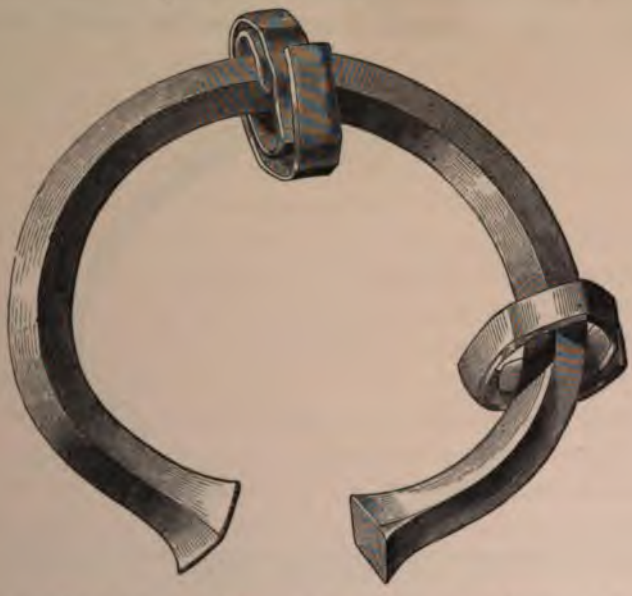


Fig. 228.—Penannular Gold Armlet (one of three) found at Stonehill Wood, Carmichael, Lanarkshire (actual size).

In 1834 three penannular armlets of gold were found together in Stonehill Wood, in the parish of Carmichael and county of Lanark. The largest of the three (Fig. 228), which, instead of being round, is somewhat quadrangular in section, with slightly expanded ends, weighs 4 ozs. 212 grs. Round it there were lapped two flat bands of thin gold, the largest weighing 259 grs. and the smallest 133 grs., making with the armlet a total of 5 ozs. 124 grs. The other two armlets

are smaller. They are somewhat quadrangular in section in the middle, but with round and considerably dilated ends. The heaviest of the two weighed 447 grs. To the other armlet there were attached two thin and flat plates of gold, one considerably narrower than the other, and so rolled round the body of the armlet that they could not be separated from it without unrolling them, and also a small ribbed penannular ring of a peculiar variety, which

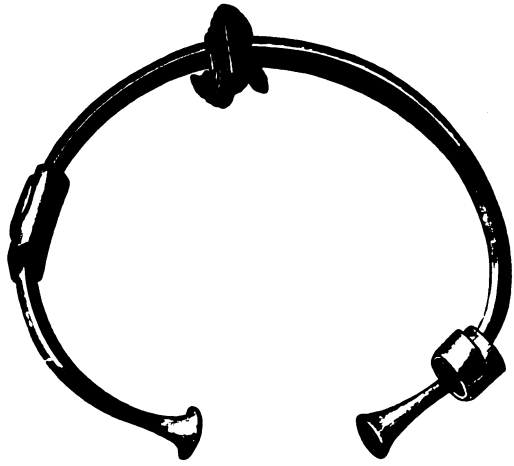


Fig. 229.—Penannular Gold Armlet (one of three) found at Stonehill Wood, Carmichael, Lanarkshire (actual size).

is not uncommon in Ireland, but has not been recorded as occurring in Scotland except in this particular instance. The weight of this armlet with these three additional appendages (Fig. 229) amounted to 1 oz. 14 grs.; the gross weight of the whole hoard being 7 oz. 105 grs. These objects were exhibited at a meeting of the Society of Antiquaries on 18th April 1864, through Mr. Franks,[1] and are now in the possession of the Earl of Home, on whose estate of Douglas they were found.

[1] *Proc. Soc. Antiq. Lond.* (Second Series), vol. ii. p. 401.

In 1780 a hoard of thirty-six gold penannular armlets of this type was ploughed up on the farm of Coul, in the island of Islay. The diameter of the solid cylindrical rods of which they were composed was fully $\frac{1}{8}$ inch, expanding to about $\frac{1}{4}$ inch at the extremities. It is stated in the letter communicating the information to the Society of Antiquaries (which is accompanied by a sketch showing the form of the armlets), that they were all melted except one, which was in the possession of a gentleman in the island.

In 1784 there was presented to the Society a drawing of an armlet of gold of this type, weighing fully 5 ounces, which had been found by a labourer in Galloway.

A pair of gold armlets, also of this type, were found in 1871, in the neighbourhood of Kilmailie, Inverness-shire. They passed into the possession of the proprietor of the estate on which they were found, and are said to have been subsequently lost.

Another pair of gold armlets of this type, found somewhere in Argyllshire, are preserved at Inveraray Castle.

A single armlet of this type, found somewhere in the Western Isles, and broken, was recently sold to a jeweller in Edinburgh, and by him transferred to the National Museum.

One of two gold armlets, apparently of this type, which had been ploughed up at Shieldhill, in the parish of Muckart, in Perthshire, was sold as bullion in Perth for £8.[1]

At a place called the Galla Law, on Gullane Links, Haddingtonshire, one or more penannular gold armlets were discovered about the beginning of the present century.[2]

Two small penannular rings of this description, scarcely

[1] Paper by Rev. Mr. Goldie read to the Stirling Field Club, 13th Dec. 1881.

[2] *Proceedings of the Berwickshire Naturalists' Club*, vol. x. p. 306.

larger than finger-rings, found in digging the foundations of a house at Strond, Harris, were acquired for the Museum from a jeweller, to whom they had been sold as bullion.

Occasionally these penannular rings or armlets of gold have their expanded ends dilated into a hollow trumpet-shaped form, similar to that of the bronze armlet found at Poolewe, Ross-shire.[1]

Dr. Daniel Wilson has figured a very fine example of this form,[2] which was found by a labourer digging peats, in the parish of Cromdale, Inverness-shire. It has the interior rim of its trumpet-shaped ends beautifully decorated with the triangular pattern so characteristic of many of the Bronze Age urns—a triangular space filled with straight lines drawn parallel to one of its sides. Dr. Wilson also notices two other bracelets of gold, apparently of this type, described by Sir John Clerk as having been found in draining a loch in Galloway, on the estate of the Earl of Stair, at some time previous to 1732. Another of the same form, found in Ayrshire, was in the possession of Mr. Thomas Brown of Lanfine.[3]

Another variety of gold armlet or necklet is formed of a flat band, tapering slightly from the middle to the extremities, and twisted like the thread of a screw, passing at the extremities into slender cylindrical hook-like terminations, with conical knobs, which interlock, and serve to fasten the circlet when worn. These spirally twisted bands, as well as the circlets of two or more strands of intertwisted wires, are often described indiscriminately as *torcs*, being so named simply because they are twisted.

A hoard, consisting of four of these armlets or necklets,

[1] See the figure on p. 163.

[2] *Prehistoric Annals of Scotland*, vol. ii. p. 460.

[3] See also the armlet of this form found with burials at Sunderland in Islay as previously described, p. 64.

was found, in the winter of 1848, on the top of a steep bank which slopes down to the sea, among some loose earth which was being dug to be carted away at a place called The Temple, which is part of the village of Lower Largo, in Fife-

Fig. 230.—Gold Armlet found at Lower Largo, 11 inches in length (actual size).

shire. Two of these are shown of the actual size in Figs. 230, 231. They were not found in association with a burial deposit, although it is stated that at some time long previous to their discovery several burials had been met with near the same spot.[1] They are all made of fillets of thin gold

[1] An old woman who lived close to the spot all her days, says that in her youth several burials were found there, and one man was supposed

worked into a spiral like the thread of a screw. The fillet tapers from the middle of its length, where it is about $\frac{3}{8}$ inch in width, to the extremity, where it is little more than $\frac{1}{16}$ inch wide, when it passes into the cylindrical

Fig. 231.—Gold Armlet found at Lower Largo, 11½ inches in length (actual size).

hooked extremity, terminating in a conical knob. They are most elegantly made, the fillet brought to a uniform thinness, and worked to a regular spiral in the cleverest

to have found a treasure, having suddenly become rich enough to build a house.—*Archæological Journal*, vol. vi. p. 53.

manner. They are all very nearly of the same size and weight.

No. 1 is 11 inches in length, when straightened out, and weighs 7 dwts. 17 grs. (Fig. 230).

No. 2 is 11⅛ inches long, and weighs 7 dwts. 15 grs. (Fig. 231).

No. 3 is 10¾ inches long, and weighs 8 dwts. 2 grs.

No. 4 is a fragment 3 inches in length, weighing 54 grs.

These beautiful examples of the goldsmith's work of the closing period of the Bronze Age in Scotland have recently been presented to the National Museum by Mr. Robert Dundas of Arniston.

That this form of twisted fillet belongs to the closing period, and not to the early period, of the Bronze Age, is indicated by the association of three examples of this type of armlet with the hollow gold object decorated with the Celtic patterns peculiar to the Iron Age system of ornamentation in this country, which were found together on the Shaw Hill, near Cairnsmuir, in the parish of Kirkurd, Peeblesshire, and have been described in the previous course of Lectures.[1] These three armlets (though described as of this form) must have been greatly more massive than the Largo examples, as they are represented to have each weighed about 8½ ozs., the bullion value of the whole hoard being about £110.

A very large hoard of gold armlets of this type, amounting by one account to "more than three dozen," and, by another account, to "about forty," were turned up by the plough on the farm of The Law, in the parish of Urquhart, Elginshire, in the spring of 1857. They were all, so far as could be ascertained, similar in style and pattern, with the exception that some had simple hooks at the extremities, serving to clasp the armlet on the arm, whilst in a few instances the

[1] *Scotland in Pagan Times:* The Iron Age, p. 138.

hooks terminated in little knobs. The spot where they were turned up by the plough is in a field about forty yards distant from the base of a large tumulus locally called The Law,[1] from which the farm derives its name. They were not found in association with a burial, and, judging from their number, they seem rather to exhibit the characteristics of a hoard than of a burial deposit; but it is stated that a small cairn had formerly covered the place where they were found, and that it had been removed when the land was brought into cultivation, a few years previous to the discovery of the hoard. There are four of these armlets now in the National Museum. They differ from the Largo examples only in the spirally twisted fillet being of nearly equal width throughout, and the recurved hooks being less distinctly knobbed at the ends. They vary in size: two of them form circlets of about 4½ inches diameter, that might encircle the neck, the other two form circlets of about 3¾ inches diameter.

The following are their measurements and weights:—

No. 1 is (when straightened) 14¾ inches in length, and weighs 8 dwts. 2 grs.

No. 2 is 14 inches in length, and weighs 8 dwts. 18 grs.

No. 3 is 12 inches in length, and weighs 8 dwts. 16 grs.

No. 4 is 11½ inches in length, and weighs 9 dwts. 2 grs.

An armlet of gold of this form, found at Belhelvie, Aberdeenshire (Fig. 232), was acquired for the Museum in 1857. The fillet of which it is formed is slightly broader and heavier than in the Urquhart examples, and more open in the spiral twists, but it resembles them in being of almost

[1] The Law is a conical mound, about 150 feet in diameter, and 15 feet in height. There is a local tradition that a golden cradle lies buried in it. It has been recently excavated by Mr. Galloway Mackintosh, and found to cover a cist with an unburnt burial, accompanied by an urn of Type 1 of Group 2d, p. 70.

uniform width throughout, though differing in the recurved ends being simple flattened hooks without knobs at the extremities. It measures (when extended) 12 inches in length, and weighs 8 dwts. 14 grs.

Fig. 232.—Gold Armlet, found at Belhelvie, Aberdeenshire (12 inches in length).

An armlet, or necklet of gold, almost precisely similar in form and size to the Belhelvie example, found near the borders of the parish of Coulter, in Lanarkshire, was in the collection of the late Adam Sim of Coulter.

Another gold armlet of this character, found at the head of Little Lochbroom, in Ross-shire, and presented to the National Museum, in 1860, by Mr. Hugh Mackenzie of Ardross, resembles the Largo specimens in the breadth of the fillet, the extremities, terminating in recurved hooks with bluntly conical knobs. It forms a circlet of about 4 inches diameter, measuring, when extended, $12\frac{1}{8}$ inches in length. Its weight is 8 dwts. 8 grs.

A more massive gold armlet, found on the Moor of Rannoch (Fig. 233), forms a circlet of $3\frac{1}{2}$ inches in diameter.

The width of the fillet in the centre is almost $\frac{1}{2}$ inch, tapering to about $\frac{1}{3}$ inch at the extremities, which terminate in simple recurved hooks without knobs.

Fig. 233.—Gold Armlet found in the Moor of Rannoch (actual size).

Of the larger and much more massive variety of armlet, formed of intertwisted cylindrical rods or wires of gold, there is but one example known to have occurred in Scotland (Fig. 234). It consists of three rods or wires twisted together round a common centre, and uniting at the ends in a single rod, which is recurved, and forms a long terminal hook. It is coiled spirally so as to encircle the arm in four complete coils, which, when extended, give a total length of $4\frac{1}{2}$ feet. This magnificent armlet, which was found at Slateford near Edinburgh, in 1846, during the construction of the

Caledonian Railway, was by far the finest example of goldsmith's work from the Age of Bronze that had ever been seen in this country, and the only one of its kind then or now known to exist. Yet it was clipped to pieces and consigned to the melting-pot by a jeweller in Edinburgh. A cast of it, however, is preserved in the Museum.

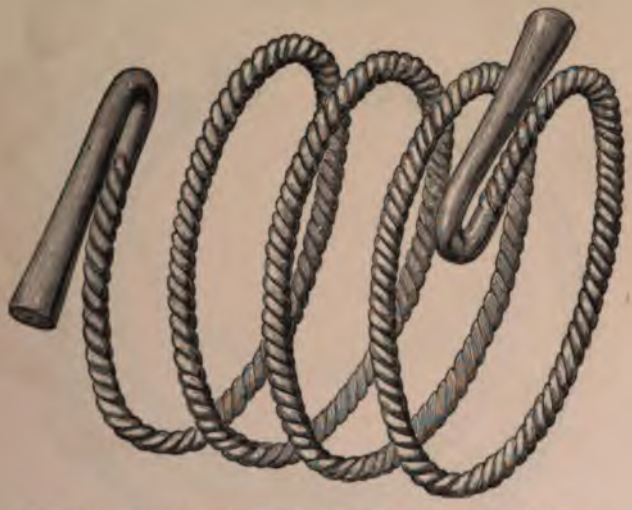


Fig. 234.—Gold Armlet found at Slateford, Midlothian, 4½ feet in length (⅔ actual size).

Another magnificent example of this type of gold ornament, which is spoken of as a "collar" or "girdle," was found in or near a circular entrenchment on the summit of a hill in the parish of Penicuik, Midlothian, about the beginning of the present century. It seems to have been also melted down, but it has been figured by Dr. Wilson from a drawing in possession of the Society of Antiquaries of Scotland.[1]

[1] *Prehistoric Annals of Scotland*, vol. i. p. 464.

No personal ornament of any period is more suggestive of costly magnificence of attire than the golden diadems of the Age of Bronze in Britain.[1] Of these, we have three examples fortunately preserved in the National Museum. Their form is that of a broad lunette of beaten gold, terminating in disc-shaped extremities. The central opening is large enough to admit of the ornament being worn either on the head as a diadem, or on the neck as a gorget.

Fig. 235.—Gold Diadem found at Coulter, Lanarkshire (7 inches in diameter).

Two of these diadems of gold were found together on the farm of Southside, near Coulter, in Lanarkshire, in 1860. One of them (Fig. 235) was presented to the Museum by the late Mr. Adam Sim of Coulter. It is 7 inches in its greatest diameter, formed of a broad band of thin beaten

[1] That they belong to the Bronze Age is indicated by their occurrence, as at Padstow in Cornwall, associated with flat axe-heads of bronze. —*Archæological Journal*, vol. xxii. p. 276.

gold, 1½ inch wide in the middle, tapering to less than ½ inch at the extremities, where it terminates in disc-like expansions, the necks of which are slightly twisted. It is ornamented with bands of engraved lines parallel to both margins.

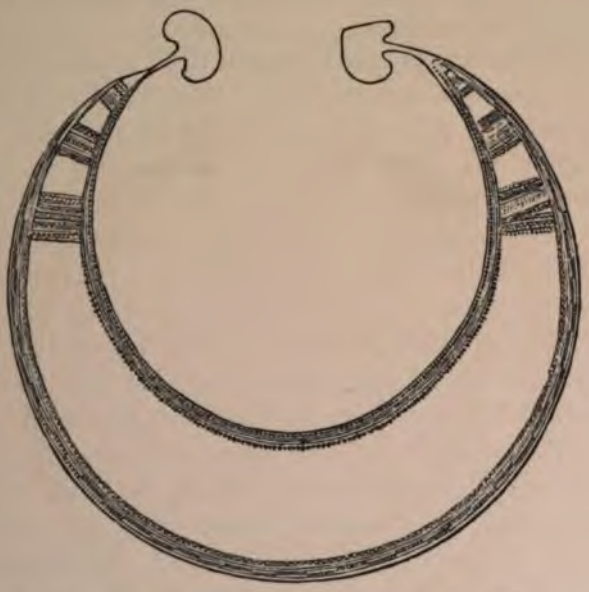


Fig. 236.—Gold Diadem found at Auchentaggart, Dumfriesshire (8¾ inches in diameter).

A remarkably fine diadem of gold of this form (Fig. 236), found at Auchentaggart, in the parish of Sanquhar, Dumfriesshire, has also been deposited in the National Museum by the late Duke of Buccleuch. When turned up by the plough, it was folded together, and rolled up almost into a ball. It is 8¾ inches in its greatest diameter, and formed, like the Coulter specimen, of a broad band of thin beaten gold, 2¼ inches wide in the middle, and tapering to the extremities, which also terminate in disc-like expansions.

One of these has lost a small portion, and appears to have been mended by pins or small rivets, the holes of which still remain. It is more elaborately ornamented than the previous example, but on the same principle of marginal bands of parallel lines, with alternate spaces of shorter lines crossing the direction of the parallel lines, and delicate wavy lines occasionally introduced.

In considering the significance of these manifestations of the prevalence of the use of gold in Scotland at a period when iron and silver do not appear among the industrial products of the people, and bronze was the only metal employed in the fabrication of cutting tools and weapons, it has to be remembered that we are dealing with evidence which is notoriously incomplete. We have only imperfect records of the discoveries of a single century out of the many that have intervened since operations of agriculture and reclamation of land and excavations of every kind have been the means of bringing to light the objects that lay buried in the soil. Yet the evidence that is before us, incomplete and imperfect as it is, is undoubtedly evidence, not of an extreme scarcity, but of an abundance of gold ornaments greatly in excess of what we might have anticipated.[1] To the questions of how this supply of gold was obtained, and whence it was derived, there is no direct answer obtainable by any method known to me. But of this we may be certain, that from whatever source the Bronze Age people of Scotland obtained their supply of the precious metal, it could not have been

[1] Much larger hoards of gold ornaments, apparently also from the Bronze Age, have occurred in England, Ireland, and the north of France. A hoard of gold objects, weighing over 11 lbs. avoirdupois, was ploughed up at Mountfield in Sussex, and sold by the ploughman as old brass for 5s. 6d.—*Proc. Soc. Antiq. Lond.* (Second Series), vol. ii. p. 247. Between thirty and forty penannular armlets of solid gold, said to have been worth over £6000 as bullion, though this must be a greatly exaggerated estimate, were found near Newmarket in County Clare in 1855, and Mr. Graves states

obtained without its relative equivalent in labour or produce. Whether they procured it from its native sources within their own territory, and by their own industry and skill, or whether they imported it in exchange for other productions, the significance of its possession with regard to their conditions of life remains the same. In like manner, it does not affect the significance of their possession of bronze that they may not have procured the copper and tin of which it is composed within their own territories. If they imported these metals also, the fact that a traffic so complex and costly was maintained and provided for, implies the existence of conditions of culture and systems of social, commercial, and even political organisation, which cannot be held to indicate a low state of civilisation.

I now proceed to sum up the characteristics of this peculiar phase of culture and civilisation as we find it manifesting itself in Scotland. Its essential characteristic is that bronze is the only metal employed in the useful arts. Its weapons and its tools on this account differ wholly in form and character from those that were used for similar purposes when the material of which they were made was iron hardened into steel. But though they are therefore, in their general aspect, strange and unfamiliar to our experience, it is not difficult to perceive that the specialty of form and character so obviously exhibited by each separate variety of tool or weapon is also obviously a form and character which is specially suited to the requirements of its purpose,

that he saw a portion of the hoard which had been purchased in Dublin for £500.—*Kilkenny Journal*, vol. iii. p. 181. The largest gold bracelet of the penannular type in the collection of the Royal Irish Academy weighs 16 ozs. 17 dwts., and the largest gold torc in the same collection weighs 27 ozs. 7 dwts.—*Collectanea Antiqua*, vol. iii. pp. 131, 221. At Quentin, in Brittany, in 1832, there was found within a circle of stones a hoard of twelve penannular armlets of solid gold, the heaviest weighing 4 lbs. 10 ozs. 16 dwts., and amounting in the aggregate to the value of £1035 as bullion.—*Archæologia*, vol. xxvii. p. 14.

in view of the qualities and capabilities of the material of which it is made. And whether they be weapons or tools, they have this characteristic in common, that they are always well made, substantial, and purpose-like. In addition to these serviceable qualities, they possess the high merit of being well designed, graceful in outline, and finely proportioned, exhibiting, even in the commonest articles, a play of fancy in the subtle variations of their distinctive forms that is specially remarkable. As the metal of which they are composed is an alloy—a compound of copper and tin in certain proportions, variable according to the purpose of the instrument,[1]—it is evident that knowledge and skill were requisite for the successful working of the material. As the forms of the manufactured articles were given to them in the moulds in which they were cast, it is evident that the brain which designed and the hand which modelled these forms must have been specially conversant with the technicalities of complicated processes, and with the experiences of dexterous and skilful workmanship implied in such manufactures. That these objects were manufactured within the country is apparent from two circumstances: (1) that in many cases they exhibit special varieties of form which are peculiar to Scotland; and (2) that the moulds themselves are found in the soil in which the objects are found. The moulds which have been found are cut in stone. They are skilfully made, and can still be used to cast from. Some of them, such as those for rings, knife-blades, and flat axe-heads, are open moulds; while others, such as those for spear-heads and looped and socketed axe-heads, are double, closed moulds, made in two moieties, which are dowelled together in cast-

[1] The analyses of the weapons and implements of bronze show that the proportions of the two constituents of the alloy—copper and tin—were by no means constant; but, roughly speaking, about nine parts of copper to one of tin appears to have been the proportion aimed at.

ing, and are capable of being fitted with cores. The hammered work of the period was equally skilful. The large globular caldrons formed of plates of bronze beaten almost as thin as sheets of paper, riveted together, and ornamented with studs, are really beautiful works of industrial art; and I venture to say that nothing finer than the workmanship of these bronze shields has ever been produced by the hammer. The people who supplied themselves with implements and weapons in this capable and cultured way, also used gold occasionally in the mounting of their weapons, and most lavishly in personal adornment. Although we know nothing whatever of their household arrangements, or the manners and customs of their domestic life, seeing that not a trace of a dwelling or site of a settlement of the Bronze Age has been discovered in Scotland, yet we are not without evidence of an indirect nature to indicate that they could not have been wholly destitute of the comforts and conveniences of life. And not the least striking of all the characteristics of their culture is exemplified in the fact that we know them chiefly, not from the circumstances in which they maintained themselves in life, but from circumstances which are the direct result of their attitude of mind towards their dead. If life with them was a struggle for existence, we look in vain for its memorials; but there is no wide district of country in which the memorials of their dead are not prominent, picturesque, and familiar features. In this, no less than in the varied phenomena of their burial customs, the preparation of the funeral pile, the fabrication of the finely ornamented urns, and the costly dedication of articles of use or adornment, freely renounced by the survivors, and set apart from the inheritance of the living as grave-goods for the dead, we realise the intensity of their devotion to filial memories and family ties, to hereditary honour and ancestral tradition.

But we attain to this realisation only by patient investigation, and after a long course of sustained and laborious effort to gather and preserve the mutilated relics and memorials of the piety and industry, the culture and civilisation, of our Bronze Age ancestors. For in our iron-shod progress we trample out the footmarks of those who thus travelled before us. We demolish their monuments, we plough their graves, we scatter their bones. We do this as if it were a necessity of civilisation, and we do it with the less compunction that we call them savages.

THE AGE OF STONE.

LECTURE IV.

CHAMBERED CAIRNS OF CAITHNESS.

FROM the several lines of investigation pursued in the three previous Lectures, we have now obtained a systematic view of the typical phenomena of Bronze Age burial, and of the typical characteristics of the Bronze Age culture. I now proceed, in the three Lectures which follow, to deal similarly with the remains and relics of the Age of Stone,—in other words, to classify the residue of the Pagan burials, and determine their associated forms of arms, implements, and ornaments.

This residue of burials and their associated objects, which our investigation has left unclassified because they have not been found assignable to either of the Ages of Iron or of Bronze, will be found to consist of types that we have not previously met with. The sepulchral constructions of the Iron Age (as we have seen) were Barrows and Cairns—mere structureless heaps of earth and stones. In the Cairns and Circles of the Bronze Age there is occasionally some approximation to a structural character, but it is only now, when we come to deal with the sepulchral remains of the Age of Stone, that we shall meet with a type of construction which is completely structural. We shall also find that the manner of burial, by the deposition of many successive interments (presumably of the same family)

in one chamber, is quite unlike the system of single and separate interments in cairns or cemeteries which characterised the Age of Bronze. The types of the urns associated with the burials in these Stone Age sepulchres will be also found to differ widely from those with which we have now become familiar as the characteristic accompaniments of the interments of the Age of Bronze. The difference in the whole character of the grave-goods is further intensified by the fact that among them we shall find no object of metal —but arms, implements, and ornaments formed simply of bone or stone.

In order that the significance of the typical character of the Chambered Cairn of the Stone Age may be fully disclosed, it will be necessary to describe with considerable minuteness of detail the several parts and features of the sepulchral constructions with which this peculiar system of aggregate burial and these deposits of non-metallic grave goods are commonly associated. I shall therefore first describe the Caithness group of Chambered Cairns, taking it as the typical group, not only because it is the largest, but because it happens to be also the group with whose special features I am best acquainted; and we shall then proceed to the examination of other groups, to the southward or northward, according as they seem to associate themselves with the typical group by their several characteristics.

In 1865 and 1866 I excavated a series of sepulchral cairns in Caithness of singular interest, inasmuch as they disclosed features in connection with the construction of Cairns that were previously unknown.

On the crest of a considerable eminence overlooking the south end of the loch of Yarhouse, on the estate of Thrumster, in Caithness, are two cairns of great magnitude within a short distance of each other. They are not circular, but

elongated in form; they lie across the crest of the hill from east to west; they diminish in breadth and height from east to west; and they have at both ends curved horn-like projections of their structure, falling gradually to the level of the ground.

The larger of the two cairns (of which Fig. 237 shows the ground-plan after it was excavated) was 240 feet in length. The breadth of the base of the cairn at the eastern end was 66 feet, and at the western end 36 feet, but the curved projections of the structure which I have called horns expanded so as to make the line across their tips at the eastern end 92 feet, and at the western end 53 feet. The extreme height of the cairn at the east end did not exceed 12 feet, sloping gradually to less than 5 feet at the west end.

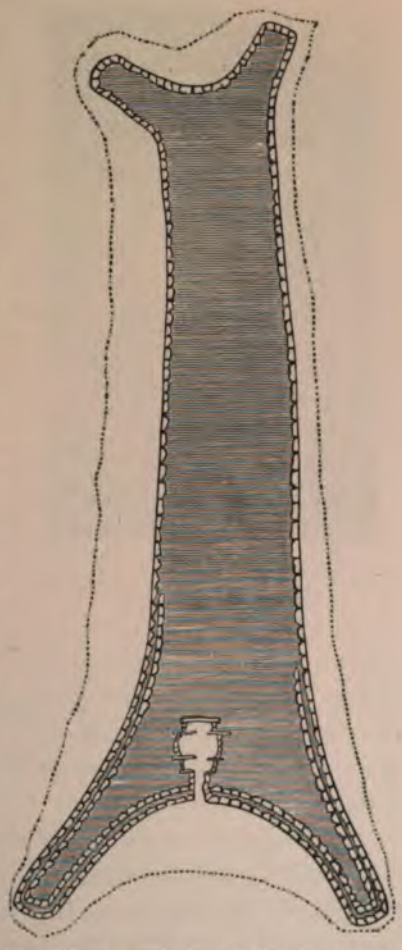


Fig. 237.—Ground-plan of Chambered Cairn at Yarhouse, Caithness (240 feet in length).

The removal of the loose stones from the upper part of the east or high end of the cairn disclosed the existence of

a chamber with a passage leading into it. The exterior opening of the passage was in the middle of the curvature of the end of the cairn between the projecting horns. Two flat stones set on end, about 2½ feet high, form the door jambs on the outside of the entrance. A well-built passage, 2 feet wide or thereby, runs inwards for 10 feet, and at its further end, where it opens into the chamber (as shown in Fig. 238), two stones, similar to those at the outside entrance, but considerably higher, are set in the wall of the chamber, forming between their edges a doorway 18 inches wide. Only one of the covering stones was found on the passage, close to the entrance to the chamber, and the height, which seemed to have increased gradually from the exterior entrance inwards, was here about 4 feet.

Fig. 238.—View of Tripartite Chamber in Cairn at Yarhouse.

The chamber to which the passage gives access is small,—excessively small, as compared with the gigantic size of the cairn itself. It measures scarcely 12 feet in length from front to back, and about 6 feet from side to side. We found the side walls still entire to a height of 7 feet. At this height there were signs of convergence to form a rudely vaulted roof, like the roofs of the bee-hive huts, the chambers in the brochs, and other constructions of dry-built stones. The ground-

plan of the chamber is roughly a quadrangular oblong, but there is a sensible curvature both in the lines of the length and of the height of the walls. They are neither laid straight nor built straight. The construction of the chamber shows another peculiarity. It is tripartite, being divided into three sections by two pairs of divisional stones projecting from the side walls at certain distances opposite each other. These divisional stones are merely rough undressed flags sunk on end into the floor, and let into the wall on either side so as to stand partially across the chamber, leaving a passage of about 2 feet wide between their edges. Entering the chamber from the passage, you find the first compartment, measuring from side wall to side wall across the doorway, 4 feet 7 inches in width, the width increasing until it becomes 6 feet from side wall to side wall at the first pair of divisional stones. Their distance from the doorway is 3 feet 7 inches at the minimum, as they are not set square to the side walls, which are slightly curved. These two stones rise to the height of 7 and 7½ feet above the floor respectively; and as they do not appear to have been ever higher, there must have been a free space between them and the arching of the roof. Passing between these stones by an aperture about 20 inches wide into the second compartment of the tripartite chamber, we find the width rather more than 6 feet, as the walls do not run exactly in line with those on the exterior side of the divisional stones. This second or middle compartment is thus a little more than 6 feet from side wall to side wall, and 5 feet 4 inches from the one pair of divisional stones to the next. The second compartment, like the first, was included under the arched roof, of which the spring is visible on the wall-head. But the third compartment differed from the other two in being covered by a flat roof formed of an enormous block of stone resting

on the second pair of divisional stones in front, and supported at the back by another great slab forming the back wall of the compartment. The side walls were built like those of the other compartments, but the whole height of this inner cell was not more than about 3 feet at the front, and 2 feet at the back. Its floor space measured 4 feet 8 inches from side wall to side wall, and 2 feet 4 inches from front to back. It not only had the roof remaining on it intact, but its doorway was closed by a slab which fitted the aperture. When this was removed, the interior was quite full of small stones from roof to floor.

Having cleared the three compartments of the chamber, and ascertained its construction, it seemed probable, that, as it did not occupy more than a twentieth part of the length of the cairn, other chambers would be found within its mass. The west end was tried, but no sign of passage or chamber appeared. The centre was tried, and trials were made at various places between the centre and the ends without result. It seemed altogether unlikely that such an enormous construction should be furnished with only a single small chamber; but the negative results of the trials along the whole length of the mass were conclusively supported and confirmed by the subsequent operations directed to the elucidation of the structural plan of the cairn and the definite configuration of its outlines.

I tell the story of this elucidation precisely as it happened, because it conveys an important lesson, which I then learned for the first time,—learning it unconsciously, and from the mere force of circumstances. I was then but a novice in the art of cairn exploration; and, like all novices, I thought only of the readiest method of cracking the nut to get at the kernel. It did not occur to me that there was anything to be done with the mere husk of the cairn beyond

the discovery of the most direct method of access to its contents. Up to that time it had been the general opinion that the object of opening a cairn was simply to obtain its contents. In accordance with the usual opinion and practice, I cracked the nut, and found that it contained no kernel—or, in other words, that it held no relics that could be exhibited in a glass case.

On the floor of the chamber (when cleared of the superincumbent ruin of its roof and the upper part of its walls, which had fallen into it) there lay a few unburnt bones of animals. They were but few, and as they belonged apparently to such small animals as might have frequented the chamber for shelter, no further notice was taken of them. The floor itself was formed of a dark clay, firmly compacted, in which a rough paving of small flattish stones appeared to have been partially though irregularly laid. The surface of the clay was hard, and had the appearance of a well-trodden floor. But reflection showed that this appearance did not necessarily imply anything that might not have been produced by the pressure of many tons of loose material for a great length of time on an originally soft floor of ashes and earth, occasionally moistened by rains. The substance of the floor was a compacted mass of about 5 inches thick of earthy clay, plentifully intermixed with ashes and charcoal of wood, and calcined bones, in a condition of extreme comminution. This layer of clay and ashes was easily detached from the natural subsoil below, from which it separated in large cake-like masses. Each of these masses was carried out into the open to be crumbled and searched. Although the amount of bone-ash which entered into its composition was very large, no single fragment of bone was discovered exceeding an inch in length. The few fragments that afforded definite indications, such as portions of teeth, jawbones, and phalanges, were unmistak-

ably human in character. About a dozen chips of flint—mere chips, and mostly small—and two fragments of pottery, of a well-made, hard-baked, thin, and black paste, were all the manufactured relics that were obtained.

Had the chamber been full of relics, the probability is that I should have been satisfied with the recovery of these, and the external structure of the cairn might have remained uninvestigated. It was, in fact, the non-success of the search for relics that suggested the direction of the investigation to other results. The best defined of the two projecting horns in front of the chamber was selected for examination. It was entirely covered with turf and heather, and was about 4 feet high at its junction with the cairn. When excavated along its entire length, it was found to be structureless in the upper part only, the lower part showing a well-built double wall, measuring 54 feet along the curvature from the entrance of the chamber to the tip of the horn. At the tip of the horn the stones used in the construction of this double walling consisted of large flags and smaller stones in alternate courses; but along the side both walls were continuously built with small flattish stones. Both the walls thus forming the outline of the inner curve of the horn were faced only to the exterior, the second or inner wall appearing close behind the first, and thus showing that the first or outer wall was built up against it. When the sloping mass of dilapidation was cleared away, the whole structure was found to be entire in the lower part, the double wall appearing like two steps of a stair all round the outline of the horns. Tracing it backwards along the body of the cairn, we uncovered its lower courses throughout their entire length on both sides and round the curvature of the posterior horns. They were constructed in the same manner throughout, and the smaller end of the cairn differed in no respect from the larger end, except in the absence of a passage and chamber.

It thus became evident that this great cairn was a cairn only in external appearance, and for the same reason that a broch is usually a cairn, because its external aspect shows merely the dilapidated ruin of a regular construction. Although by the dilapidation of ages this cairn had assumed the appearance of an oblong mass of loose stones, it was now made clear that it had originally been built upon a definite ground-plan, with a double wall defining its external outlines. Of its external elevation we had portions remaining to the height of 4 feet, although along the greater part of its outline, the foundation courses only were left in position. But besides this, it was also a regular construction, in the architectural sense of a structure, with an internal, as well as an external elevation, for it contained an interior chamber covered by a roof, partitioned into compartments, and provided with access by a lintelled passage from an external doorway. It was not built with mortar or cement of any kind; its stones were unsquared, and bore no mark of any tool; its roof was partly flat and partly arched or vaulted by the overlapping of the stones; but, in all these respects, its constructional features are not different from those of the dry-built structures of the early Christian period, or of the Iron Age of the Pagan time. But its singularity of form, and the absolute individuality of its architectural conception, preclude the possibility of assigning to it any relationship with them. In point of fact, we have hitherto met with no form of structure to which it is comparable.

The second cairn (Fig. 239), closely resembling the first in character, stood on the crest of the same hill about 300 yards distant. Its extreme length is 190 feet, its greatest breadth across the body of the cairn 45 feet, and its least breadth at the smaller end 25 feet. Like the previous example, it lies east and west, with the higher and wider end of the cairn facing the east. The horn-like projections

in this example are shorter in proportion to the size of the cairn, and more dilapidated, but enough remained of their foundations to determine accurately their shape and dimensions. The middle part of the cairn had been greatly destroyed by the removal of the stones for building purposes, but fortunately the chamber and its contents had not been interfered with. The horns at the wide end of the cairn project about 30 feet, and are from 10 to 12 feet wide at the tips. The same double walling, faced only to the exterior, extends round the original outline of the cairn, and defines its external form. This double wall retained 5 feet of its height, in the centre of the semicircular sweep of the horns, at the wide end of the cairn. Here, as in the former case, was the entrance to the chamber. The passage leading into it was 9 feet long and 2 feet wide. None of its roofing stones remained. The chamber was tripartite, like that of the other cairn; but it was slightly

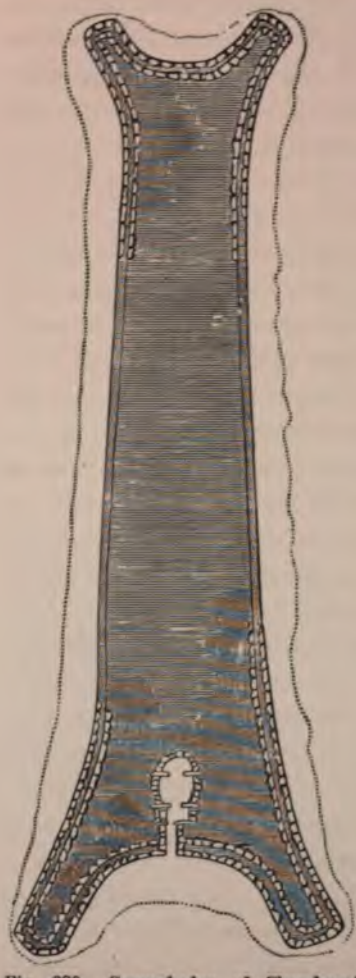


Fig. 239.—Ground-plan of Chambered Cairn at Yarhouse, Caithness (190 feet in length).

larger, and it differed also in the form of the third compartment, which ended with a semicircle, and seemed to have been included under the same arched roof with the other two compartments. The divisional stones were lower than those in the first cairn—the first pair being only 5½ feet in height, and the second pair 4 feet. As the side walls of the chamber showed no signs of convergence at the height of 5 feet, it seems impossible that the divisional stones could have reached to the roof; and the inference is that the arch of the roof, resting only on the side and end walls, must have spanned the whole chamber, which would thus be tripartite only in its lower portion. The first compartment, next the entrance, was nearly square—measuring 5½ feet from side wall to side wall, and 4 feet 10 inches from the end of the passage to the opening between the first divisional stones. The second compartment was 7 feet 9 inches wide at the inner side of the dividing stones, widening somewhat in the centre, and contracting to 7 feet at the next pair of dividing stones. The semicircular compartment at the back was 6 feet 8 inches in width at the front, and 5 feet in length from front to back.

On the floor of the first compartment, to the left of the entrance, a cist was placed, formed of slabs set on edge, between the front wall and the divisional stone on that side of the chamber, and covered in by two smaller slabs. It was about 4 feet 4 inches in length, 20 inches wide, and 9 inches deep to the level of the floor. At this level, in the dark earthy clay which filled the interior of the cist, there was a whitish layer of softened bones in a condition of extreme decay. In the east end of the cist were the fragments of an urn, ornamented with parallel bands of impressions of a twisted cord, showing the fibrous texture of the strands. A necklace of small beads of lignite (Fig. 240) had

been deposited with the urn, and by washing the clay removed from the cist, seventy of these were recovered.

Fig. 240.—Beads of Lignite (actual size).

The floor of the chamber itself, in all the compartments, consisted of a layer of compacted clay and ashes, fully 6 inches in thickness, intermixed with charcoal, and burnt bones, human and animal. On the surface of this compacted floor there was a loose layer, in which were greatly decayed fragments of human bones, unburnt; and in the corners of the compartments of the chamber were numbers of human teeth, of which the osseous parts had perished, and the enamel of the crowns only remained. Not a vestige of pottery, not a single chip of flint, no manufactured object whatever, occurred either in or on the floor—except the urn and the beads enclosed within the cist.

Another cairn (Fig. 241) of the same character as those at Yarhouse lies along the ridge of a small elevation in the Moor of Camster, about three miles distant. Its extreme length is 195 feet; its breadth at the wider end, which looks to the east, is 64 feet; and at the narrow or western end 32 feet. In this example the horns are short but well defined. In the space between them the double retaining wall of the east end of the cairn presents a double curvature, and was found standing to a height of 7 feet. Judging from the analogy of the Yarhouse cairns, we expected to find the passage opening between the projecting horns of the high end of the cairn, but it was only after clearing away the loose slope of fallen stones along the retaining wall of the south side, that we discovered a passage leading from that side into a small chamber directly under the apex of the cairn. The passage was little more than about 2 feet high at the entrance, and about the same in width, and con-

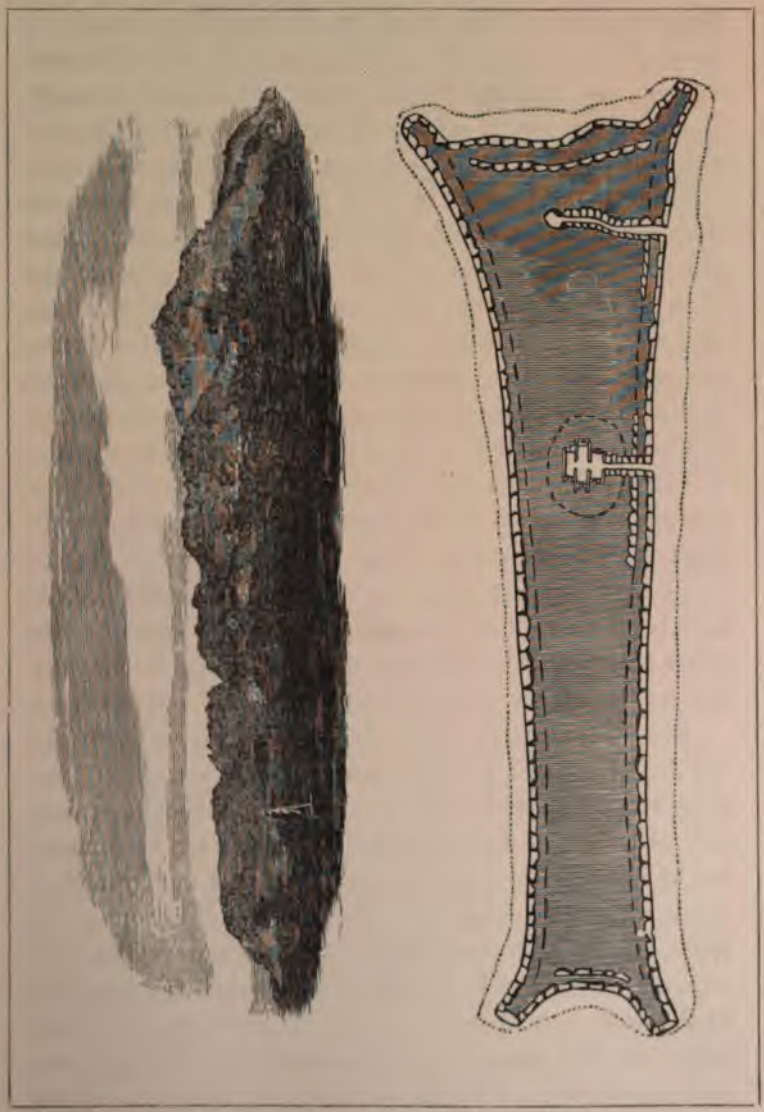


Fig. 241.—View and Ground-plan of Chambered Cairn at Camster, Caithness (195 feet in length).

sequently could only be crawled into when fully cleared of the stones and rubbish. It went nearly straight inwards for about 17 feet, when it turned a little to the right, and entered the chamber by an irregularly arched doorway. The chamber was a small cell, the lower part of its side walls composed of five slabs set on edge. These slabs were irregular in shape and unequal in height, and the space above them was levelled up and built upon with smaller stones. The walls thus carried up were gradually brought to an approximately circular form, and converged to a bee-hive roof, covered in by a single stone of about 9 inches square, at a height of about 6 feet from the floor. Had the floor been circular, it would have been no more than 6 feet in diameter. Instead of being formed of earth, as was the case in the chambers of the Yarhouse cairns, the floor of this chamber was formed of two large flag-stones, which roughly fitted the interior space. When these were raised, it was found that they lay upon the undisturbed subsoil. The chamber thus contained no trace of any sepulchral deposit either on or underneath the floor. Its principal interest was that its constructive features were complete from floor to roof.

Fifty feet along the south side of the cairn we found the opening of another passage, leading into a chamber of the same tripartite form which was characteristic of the cairns at Yarhouse. This passage was remarkable for its unusual height and width, and also because it was rudely arched across with overlapping stones for a few feet at the outer end, while further in it was lintelled over with stones laid flat from side to side. The lintelled portion was 4 feet high and 2½ feet wide, and where the roof of the passage merged into that of the first compartment of the chamber, the lintels rose successively, like the under side of a stair, from front to back of the roof of the compartment. The whole length of the passage was 10½ feet. The tripartite chamber was similar

in plan and construction to those already described. The walls remained entire to a height of 5 to 6 feet, and at that height showed signs of convergence all round. The first pair of divisional stones were 6 to 7 feet in height, the second pair only 5 feet. It seemed as if the second and third compartments had been covered by one bee-hive roof, the first being lintelled over as has been already described. The floor of the chamber was a compacted layer of clay and ashes, of varying thickness, intermixed with quantities of burnt bones, human and animal. In the loose layer which lay on the surface of this compacted mass there were found a few fragments of skulls and other bones of the human skeleton, unburnt, and mingled with splintered bones of the horse, ox, deer, and swine. No fragments of pottery, and no chips or implements of flint were found.

If the investigation of these examples of a very peculiar type of sepulchral structure has been singularly barren of results, as regards the associated relics which are the usual accompaniments of cairn burial, we have at least ascertained a series of facts regarding the structure of the cairns themselves, which are full of significance. That significance becomes at once apparent when it is remembered that all the sepulchres of the Bronze and Iron Ages with which we have previously become familiar are absolutely structureless,—mere heaps of earth and stones piled over the cists or graves which contain the deposits. Here, on the contrary, the deposits are placed in chambers, constructed within the mass of the cairn, which thus presents an essential feature, distinguishing it from the structureless cairns of the Ages of Bronze and Iron. The cairns with which we are now dealing are chambered cairns, furnished with a passage for access to the interior apartments, and by this essential feature of their character they are separated from all varieties of sepulchral constructions that are unchambered. In addition

to this, they also present the equally characteristic and typical feature of being constructed on a definite ground-plan, with a distinct individuality of form and outline, which is defined externally by a double retaining wall.

Keeping these typical characteristics in view, let us now proceed to examine another variety of chambered cairn, of which I also excavated two examples in the same locality.

The first of these (Fig. 242) is situated on a small eminence at Ormiegill, near Ulbster. It presents the same characteristics of external form and internal structure, but is as remarkable for its shortness, in proportion to its width, as the previous examples were for their length. Its extreme length is only 66 feet, and its extreme width nearly the same. The horns expand in front till they are 50 feet apart, those at the other end being 37 feet apart. The horns in front are 8 feet broad at the tips, which are convex, and those behind are 9 feet broad. A double wall of construction, faced only to the outside, defines the whole exterior outline of the structure; and a circular wall, 80 feet in circumference, surrounds the chamber. The passage opens from the middle of the concavity between the horns in the wider end of the cairn. It is 10 feet long, and 2 feet wide, and seems to have been lintelled over. The chamber is tripartite on the ground-plan. The first compartment measures on the floor only 3 feet by 4 feet 10 inches, and there are signs of convergence of the side walls at a height of about 3½ feet above the floor. The second compartment measures about 8 feet by 6½ feet, and the third about 5 feet by 2 feet 3 inches on the floor, but the outward inclination of the great slab, forming the back wall of the chamber, made the cross measurement greater when taken higher up. On the floor of the chamber a quantity of unburnt bones of human beings and animals lay, mingled with the débris of the upper part of the cairn, with which the chamber was

filled. The floor itself consisted of a layer of ashes fully a foot thick. A pavement of slabs had been laid in some parts of the chamber, and this layer of ashes extended both over and under the pavement. The natural subsoil beneath was in some places deeply pitted, the

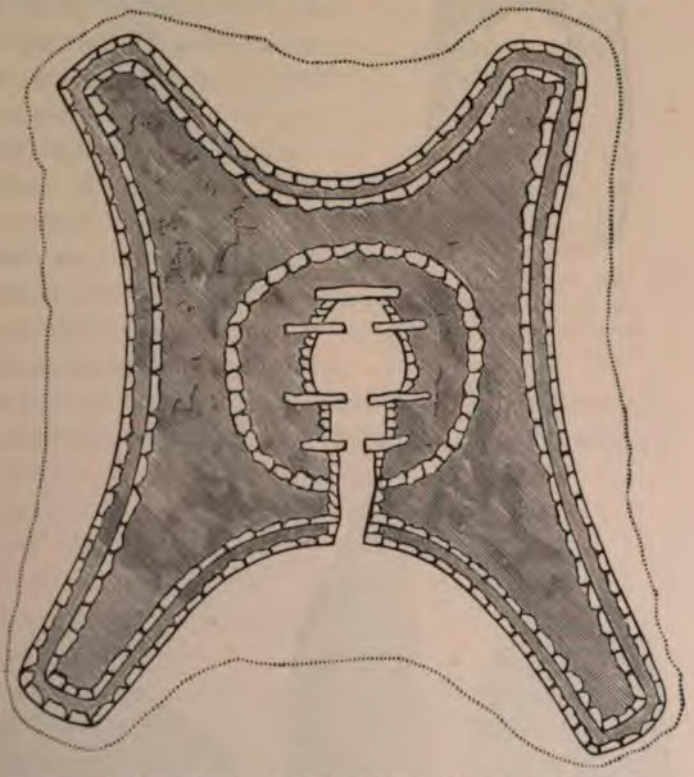


Fig. 242.—Ground-plan of Chambered Cairn at Ormiegill, Caithness (66 feet in length).

pits being filled with the same compacted layer of ashes and bones. The quantity of burnt bones in the ash-bed was very great. We recognised about thirty fragments of skulls, which, from their varying size and thickness, we judged to have been those of different individuals. The

bones were very irregularly burned, some being merely charred in part of their length, and others completely calcined. Besides the human bones, there were a very large number of bones of animals, among which were those of the horse, the ox, the deer, the dog, the swine, and some leg and wing bones of fowls. Fragments of pottery, many of them indicating that they had been portions of round-bottomed vessels, made of a thin dark-coloured paste, hard and smooth, and without ornament, and a great quantity of chips and flakes of flint, were intermixed with the ash-bed

Fig. 243.—Polished Hammer of Grey Granite from Chambered Cairn, Ormiegill (4 inches in length).

Figs. 244, 245, 246.—Portion of Flint Knife, Arrow-head, and oval Knife of Flint, from Chambered Cairn, Ormiegill (actual size).

throughout. In the central compartment of the chamber, imbedded among the compacted ashes of the floor, there were found a finely polished hammer of grey granite (Fig. 243),

4 inches in length, pierced with a hole for the handle; the point end of a finely finished flint knife with a ground edge (Fig. 244); an arrow-head of flint, triangular in form, but lop-sided, and hollowed at the base (Fig. 245); an oval and

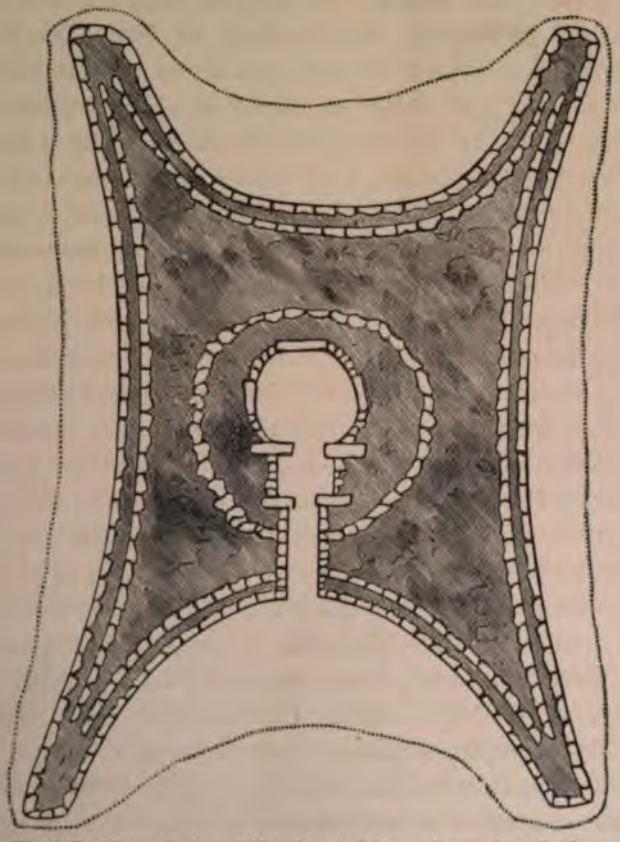


Fig. 247.—Ground-plan of Chambered Cairn at Garrywhin, Caithness (80 feet in length).

pointed knife of flint formed from a flake trimmed to an edge all round (Fig. 246); several flakes, serrated on one side, which seemed to have been used as saws, and a number of well-made scrapers of flint of the usual form. In the

first compartment of the chamber another arrow-head of the same triangular form was found.

The second cairn (Fig. 247), locally known as the Cairn of Get, is situated in a hollow among the hills at Garrywhin, near Bruan. Its extreme length is about 80 feet, and its greatest breadth about 60 feet. The horns project about 20 feet in front and about 15 feet behind. The passage is 11 feet in length, about 2½ feet high at the entrance, and 2½ feet wide, but it widens about 6 inches further in. The double wall, defining the outlines of the external form, and the circular wall surrounding the chamber, again present themselves in this example; but the chamber itself exhibits a singular variation. The divisional stones, which would have formed the partitions between the second and third compartments, are in their places; but, instead of being set across the floor as divisional stones, their faces are set flush with the walls, so that the second and third compartments are thrown into one, and the chamber is thus subdivided into two compartments only, instead of being tripartite. The first compartment measures about 6 feet by 4½, and the second 11 feet by 10. Its walls begin to converge about 5 feet above the floor. The roof had collapsed, and the chamber was filled with its ruins. The floor, as in the previous instance, was a compacted mass of ashes and bones, fully 18 inches thick. On the surface of the floor, in the first compartment, were four unburnt skeletons, the skulls lying close to the wall on the right of the entrance. In the compacted mass of ashes which formed the floor, the quantity of human and animal bones was very great. They were mostly more or less burnt and fragmentary. The animals represented were the horse, ox, dog, deer, swine, and probably the sheep or goat. Flint chips and flakes were plentifully intermixed throughout the mass, and fragments of pottery of blackish colour, some of which retained indi-

cations of their having been portions of round-bottomed vessels, thin, hard-baked, well made, and mostly unornamented, were equally abundant. The only other articles found were three finely made leaf-shaped arrow-heads of flint, one of which is shown in Fig. 248.

Fig. 248.—Leaf-shaped Arrow-head of Flint from Chambered Cairn at Garrywhin (actual size).

Looking to the structural characteristics of these two examples, we find that they do not differ from those that have been previously described, except in their length. They not only belong to the same type, but to the same variety of the type,—a variety which is distinguished by the peculiar projections from both ends of the structure, which I have called horns.

I now proceed to describe other examples, which differ from these in having no such projections, although they still possess the typical characteristics of a definite external form and an internal chamber. At Camster, not far from the long cairn previously noticed, a very large circular cairn (Fig. 249) crowns a small eminence in the moor. It measures 220 feet in circumference at the base, and about 18 feet in height in the centre. We obtained access to the chamber from the top of the cairn. It had been roofed by two slabs, one of which had given way, and the chamber had become filled with the loose stones falling into it from above. Having cleared these out, we found the direction of the passage leading to the E.S.E. side of the cairn, and uncovered its exterior opening. It was packed full of stones from end to end, and as it is over 20 feet in length, and closely roofed with flags of enormous size, this packing of stones appeared to have been introduced purposely. At the exterior opening the passage is only about 2½ feet high by

2 feet wide, increasing in height and width inwards, until, at the entrance to the first compartment of the chamber, it is

Fig. 249.—Ground-plan of Chambered Cairn at Camster, Caithness (75 feet in diameter).

about 3½ feet high and 2½ feet wide. It is buttressed at intervals on both sides throughout its length by stones standing edge-ways in its walls, which help to support the massive roofing slabs, as well as to strengthen the dry-built walling.

The chamber is tripartite on the ground-plan, and barrel-shaped in the vertical section (as shown in Fig. 250), the first compartment forming a sort of flat-roofed porch or ante-chamber to the barrel-shaped part or principal chamber, which is formed by carrying the walls over the top of the first pair of divisional stones, and uniting the second and third compartments under one roof. The walls are 10 feet high, bulging slightly outwards in the middle, and contracting upwards to the roof from a height of 7 feet above the floor. One of the roofing stones, as I have said, remained in its place. The roof of the first compartment was also formed

of two large slabs, which had their ends supported on the wall heads of the side walls of the compartment; and their sides were carried on transverse lintels laid across the inner sides of the doorways. The doorway entering the compartment from the passage was only 17 inches wide, and 3½ feet high. The front wall on either side of it is formed of a single stone. The side walls are compactly built, and measure, the one 3 feet 7 inches, the other 3 feet 10 inches in length, and 3½ feet high.

Fig. 250.—Section along Passage and through the Chamber of Chambered Cairn at Camster, Caithness (75 feet in diameter).

The entrance from the first compartment into the larger chamber beyond it is but 15 inches wide, and 3 feet high. The divisional stones flanking it are 7 feet high, and, as they form part of the walling of the oval chamber, they are set at an angle to the side walls of the front compartment, so as to fall in with the oval form of the chamber beyond. The third compartment is formed by two divisional stones, about 4½ feet distant from the second pair, and 3 feet from the back of the chamber. They are only 4 feet high, leaving a free space of 6 feet between them and the roof.

A number of bones, both human and animal, were found on the surface of the floor of the chamber. Among these bones, on the surface of the floor, was an iron single-edged knife or dagger-blade, about 4 inches in length. In the middle of the passage, or about 4 yards outwards from the chamber, and nearly the same distance from the exterior

entrance, two human skulls, with the bones of the upper extremities, were found among the stones with which the passage was filled. The bones of the lower extremities, if in contact with the damp soil of the bottom of the passage, would have decayed more quickly, and this we judged to be the reason why they were not found. These, and the bones found with the iron knife on the floor of the chamber, we considered to be not necessarily connected with the original use of the structure. From their position they might have been introduced at any time, and must have been placed where they were found subsequent to the formation of the compacted mass of ashes and burnt bones of which the floor itself was composed.

This layer of burnt bones and ashes, which formed the floor of the chamber, was from 9 inches to a foot in thickness. Imbedded in it were a considerable number of fragments of human bones, and bones of animals, mostly imperfectly burnt, but in some cases completely calcined. We judged that at least three, if not four, different skeletons were indicated by the broken fragments, but probably the number was greater than this. Many fragments of pottery were found. They were chiefly portions of round-bottomed vessels, of a singularly thin, black, hard-baked paste. Some had thickened, and others had everted, lips; and one was pierced with holes immediately under the rim. They were mostly smooth and plain, but one of larger size was ornamented by impressions of the finger-tip and nail obliquely thrust into the soft clay. The only other manufactured object found was a small but finely formed flint knife (Fig. 251), of that peculiar variety of this implement which has a straight and well-ground cutting edge.[1]

[1] For other examples of this variety of flint knife, see the fragment found in the cairn at Ormiegill, figured at page 246, and also those described in Lecture VI., p. 369.

The external form of this cairn was not ascertained beyond the disclosing of the bounding wall for a few feet on

Fig. 251.—Flint Knife with ground edge from Chambered Cairn, Camster (actual size).

either side of the doorway. This showed that a bounding or defining wall existed, and, from other indications, we concluded that it was probably continued all round the circumference of the cairn. But the distance and the expense forbade the further determination of this interesting question.

On the summits of the hills of Yarhouse there were four cairns, the chambers of which had been explored about ten years previously by Mr. A. Henry Rhind, the founder of this Lectureship. The results of his investigations of the floors of the chambers, so far as they go, are the same as those which I obtained from the cairns I have now described. On the floors Mr. Rhind found bones, unburnt, and in the floors burnt bones and pottery, but he met with no flint chips or implements of any kind; and his attention was not attracted to the external or structural form, although he remarked that the form of the internal chamber was similar to that of the greatest of the Irish cairns at New Grange, in Meath. In order to determine how far the external configuration of these four cairns might correspond with the new idea of cairn structure, which I had received from the investigation of the horned cairns, I spent some time in making measured plans of the four whose chambers had been examined by Mr. Rhind, and in clearing their external outlines from the mass of fallen stones by which they were concealed. They were

greatly dilapidated, but the examination disclosed the fact that they also had originally possessed an external structural form on the ground-plan, the outlines of which were defined in some cases by a single, and in others by a double, wall, in the same manner as in the horned cairns.

Fig. 252.—Ground-plan of Chambered Cairn at Yarhouse, Caithness.

The largest of this group, situated on the highest ridge of the Yarhouse Hills, is an oval-shaped cairn (Fig. 252), measuring about 55 feet in its longer, by 45 feet in its shorter, diameter. Its chamber is now not more than 8 or 9 feet in

height, but the stones thrown out of it had been piled to a considerable height all round it, so that the outer slope of the cairn seemed nearly of its original altitude at about 15 feet. The passage leading into the chamber is about 20 feet in length, but only 2½ feet wide, and scarcely more in height at the entrance. It is built in three spaces, separated by flagstones set on edge, and projecting slightly into the passage-way. These help to carry the lintels, and at the same time to steady the walls of the passage, as we have noticed in the case of the Camster cairn. The chamber is, like the passage, somewhat irregularly built. It is tripartite, and at the height of about 7 feet above the floor there are indications of convergence to form the spring of the rudely arched roof. The first compartment is about 6 feet by 4 feet, the middle compartment about 9 feet by 5 feet, and the third compartment about 5 feet by 6 feet at the entrance, and 4½ feet at the back. The divisional stones, and the stone which forms the back of the chamber, are of great size. The remains of a double wall, which seems to have surrounded the whole structure, and defined its external outline, were traced for a short distance on either side of the exterior opening of the entrance passage. The outer of the two bounding walls also appears for some distance at the back of the cairn.

The second largest of these chambered cairns (which is situated on the ridge of a hill considerably to the northward of the first) is of circular form (Fig. 253), about 40 feet in diameter. The original outline of its circumference is defined by a double retaining wall, which we were able to follow for a considerable distance on either side of the exterior opening of the entrance passage. The passage itself is about 15 feet in length, a little over 2½ feet wide at the external entrance, and widening to about 3½ feet immediately behind the jambs, which flank the entrance to the

chamber. The chamber in this instance is tripartite, with a semicircular ending similar to that of the chamber in the

Fig. 253.—Ground-plan of Chambered Cairn at Yarhouse, Caithness.

long cairn in the same neighbourhood, which has been previously described. The total length of the chamber is about 15 feet, with a minimum width of about 5 feet. The divisional stones are less massive than in the oval cairn last described; the walls are greatly dilapidated, and all the lintels of the passage gone.

The third cairn (which is situated in the immediate neighbourhood of the first) is considerably smaller (Fig. 254), being only about 30 feet in diameter. The passage, which is about 8 feet in length, leads into a tripartite chamber, nearly 15 feet in length, and nowhere exceeding 5 feet in width. The back of the chamber reaches further towards the back of the cairn than in any of the other examples, and the three compartments into which it is divided are of nearly equal

length. The divisional stones are large, but not high, and on account of the dilapidation of the cairn there is no distinct indication of the spring of the arched roof.

Fig. 254.—Ground-plan of Chambered Cairn at Yarhouse, Caithness.

The fourth cairn (Fig. 255) is in the immediate neighbourhood of the first and third, and is the smallest of the

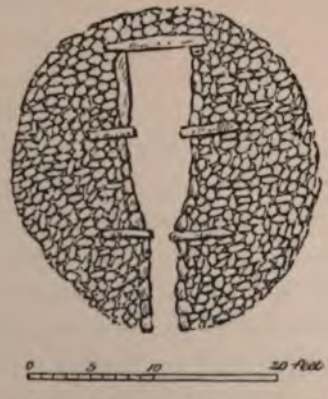


Fig. 255.—Ground-plan of Chambered Cairn at Yarhouse, Caithness.

series. It is slightly oval in plan, measuring about 30 feet in the longer and about 25 feet in the shorter diameter.

The passage is about 10 feet in length by 2½ feet in width. It leads into a chamber subdivided into two compartments, the first of which is triangular in form and about 8 feet in length, the side walls slightly curved, while the second is more rectangular in form, about 6 feet in length and 4½ feet wide. Like the last, this cairn is greatly dilapidated, and the method of roofing the chamber is not now obvious, but the probability is that, like all the others, it was covered by an arching of overlapping stones.

In another cairn, locally known as Carn Righ, which I excavated, on the opposite shore of the Loch of Yarhouse, the chamber had been completely destroyed by being quarried out for lintels to a neighbouring house and steading, but the exterior outline of the cairn showed the double circular bounding wall still standing to a height of from 3 to 4 feet, completely round the original circumference, though now imbedded about 6 feet within the verge of the loose stones which formed the base of the cairn.

Finally, I excavated a cairn on the hill above Bruan (Fig. 256), which, as we shall subsequently see, forms a connecting link between the Caithness form and the Orkney form of chambered cairn. It was externally about 40 feet in diameter, rising to a height of about 14 feet. The passage was 10 feet long, 2 feet 9 inches wide at the entrance, where it was 3 feet high, increasing in width and height inwards until it became 4½ feet wide, and 4 feet high at the entrance to the chamber. The chambered interior of the cairn differed from that of the others, in this respect, that it consisted of a principal chamber of two compartments (like that of the cairn near Garrywhin [1]), and also presented the peculiarity of a small side-chamber opening from the principal chamber. The dividing slabs in the principal chamber did not rise to the roof, which formed one vault

[1] Figured and described at p. 247.

over both compartments. The first compartment measured 8 feet on the floor from side wall to side wall, and 4 feet from the jamb-like stones at the aperture of the passage to the divisional stones between the two compartments. The second compartment, with rounded corners, was about 9 feet diameter, and the extreme height of the walls remaining was about 8 feet. They slanted outwards from the base to nearly the middle of their height, and were again brought inwards above the middle by the overlapping of the stones to form a dome-shaped roof. As usual a great stone was set in the back wall facing the entrance, and there were other

Fig. 256.—Ground-plan of Chambered Cairn near [illegible], Caithness.

two great slabs in the middle of the side walls where the second pair of dividing stones ought to have been, but instead of projecting across the floor, they were set flush with the face of the wall and the building carried over them. The small side-chamber opening off the principal chamber on the south side measured 4 feet by 3 feet, and was only 3½ feet high. It was irregular in shape, one of its end walls measuring 3½ feet, and the other only 2 feet on the floor. The roof was formed of a single flag, the floor of

another, and a third formed the partition between it and the principal chamber. On raising the flag which formed the floor of the side-chamber, another flag was found immediately beneath it, and beneath both a layer of clay 4 inches in depth, plentifully intermixed with charcoal, ashes, and burnt bones. Beneath this layer of clay there was a third flagstone, which lay upon the undisturbed subsoil of the hill. The whole floor of the principal chamber and the inner part of the entrance passage consisted of an accumulation of ashes and broken and burnt bones, about 12 inches in depth. The bones were those of human beings and animals. The human bones, though plentiful, were highly calcined, and so much broken that it was impossible to determine the number of skeletons they represented. The animal bones included those of the horse, the ox, the red deer, the swine, and sheep or goat, and a large-sized dog. Flint chips occurred in less abundance than in the neighbouring cairns, but the quantity of broken pottery was very great, amounting to several hundreds of fragments. Many of these were plainly portions of round-bottomed vessels, mostly of a dark, hard-baked paste, and occasionally ornamented with impressions of the finger-tip and nail thrust obliquely into the clay. The only other objects found were an oblong pebble with smoothed ends and sides, and a flat piece of bone 3 inches long with a smooth chisel-like edge—which may have been moulding tools for pottery.

At Rhinavie, near Skelpick, in Strathnaver, Sutherlandshire, there is a group of three cairns ranged in line (Fig. 257), which were examined by the late Mr. Mackay of Skelpick, at the instance of the late Dr. John Stuart, shortly after the excavation of the Caithness Cairns had drawn attention to their peculiar features. They have been recently described by Rev. Robert Munro, Old Kilpatrick,[1] and I am indebted

[1] *Proc. Soc. Antiq. Scot.*, vol. xviii. p. 228.

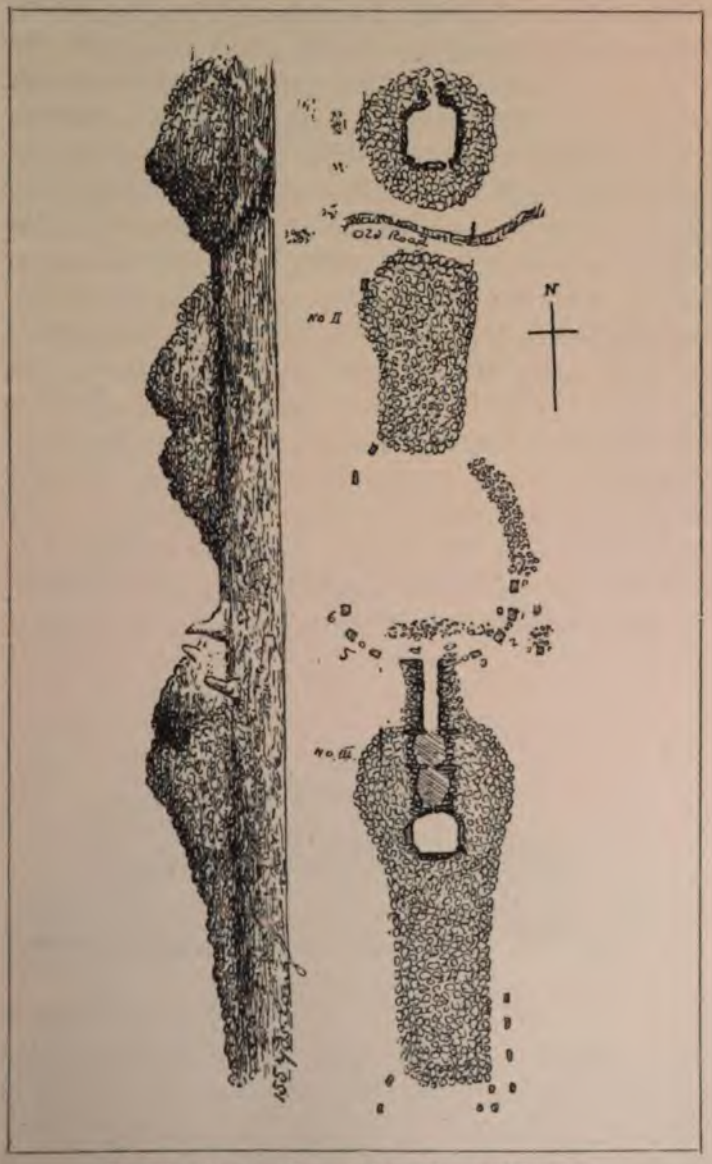


Fig. 257.—View and Ground-plan of Group of Chambered Cairns at Rhinavie, Strathnaver.

to him for the use of his drawings and plans, which show their present appearance. They lie pretty nearly north and south, the two long cairns having their higher and wider ends to the north. The largest of the two long cairns is 230 feet long and about 80 feet wide at the broad end, narrowing to about 50 feet wide at the other end. It contains a tripartite chamber in the north end, reached by a passage 17 feet in length, and about 2½ feet in width, and nearly the same in height. The first compartment of the chamber opening from the passage is at present inaccessible in consequence of the walls coming towards each other; the second compartment is 5 feet in length, by about the same in width, and originally about 6 feet 10 inches in height; the third compartment is over 7 feet in diameter, and about 8 feet in height. At the exterior extremity of the entrance passage there is a semicircular arrangement of six upright stones (Fig. 258) varying in height from 3 feet to 7 feet 10 inches, and placed at distances varying from 10 feet to 16 feet apart.

Fig. 258.—North end of larger Chambered Cairn at Rhinavie.

They occupy a position with respect to the entrance passage into the cairn similar to that of the expanding "horns" of the Caithness cairns. A similar arrangement of smaller stones exists at the lower end of the cairn.

The second, lying to the northward of the first cairn, is

an oblong heap of stones about 100 feet in length. It has not been excavated, but there are indications of its chambered character.

The third cairn, furthest to the north, is circular, about 60 feet in diameter, and contains a central chamber, the walls of which are composed of five great slabs set on end, and the intervals between them filled with dry built walling. The chamber is about 8 feet in diameter, and nearly the same in height.

No relics of any kind were discovered in the examination of these chambers, but the floors still afford indications of the presence of charcoal and burnt bones, and there can be no doubt that their contents were analogous to those of the other Caithness cairns.

A fourth cairn of the same type (Fig. 259) is situated at some distance from these, on the other side of the burn of Skelpick. It is about 220 feet in length, and 20 to 30 feet in width. It lies north and south, and has a passage 10 or 12 feet in length, leading into a chamber of two irregularly oval compartments, the first about 8 feet by 10, and the second about 10 by 12 feet, each being apparently about 8 feet high. The lintel over the opening leading from the one compartment into the other is still in its place, and measures 9 feet in length, 3 feet 6 inches in height, and 18 inches in thickness. The walls of the chamber are formed of great stones set on end at intervals all round, the interspaces being filled up with dry walling.

From this investigation of the peculiar features of these Caithness cairns, it is thus apparent that they differ widely in their character from the structureless cairns of the Bronze Age, and that their typical characteristics are (1) the presence of a definite external form, which is structural, and (2) the presence of an interior chamber accessible by a passage. It is also apparent that in this small area there

are two well-marked varieties of this typical form. One of these resembles the Bronze Age cairns in the circularity of its external form, while differing from them in its internal construction. The other differs from the Bronze Age cairns,

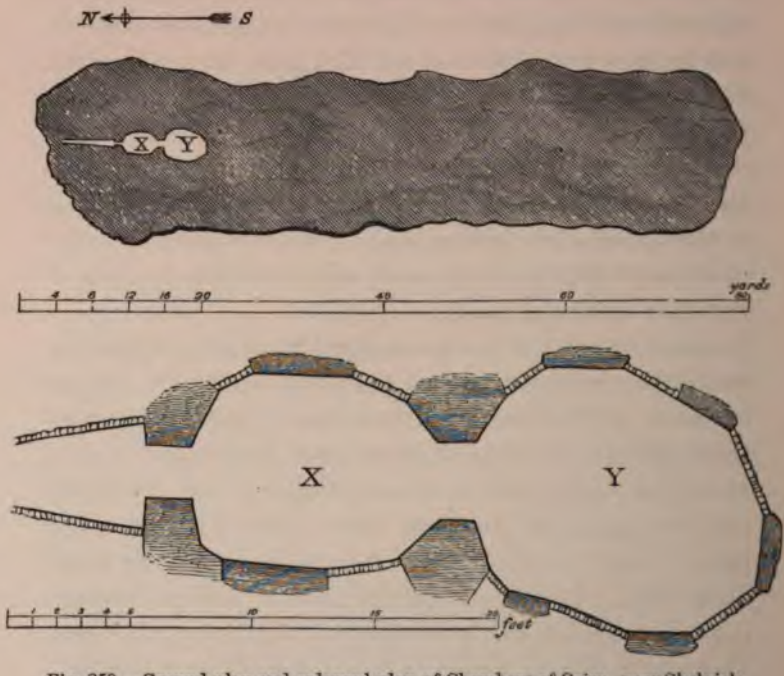


Fig. 259.—Ground-plan and enlarged plan of Chambers of Cairn, near Skelpick.

both in external configuration and internal construction. The inference is that the circular form passed on into the Bronze Age, while the other form did not, and that the form which is most unlike the Bronze Age form is the earlier of the two.

This earlier and more remarkable variety is externally a construction distinguished by its length—ranging in these examples from 240 to 190 feet in length, lying approximately east and west, with the higher end to the east, and

terminating at both ends in curvilinear projections, the whole external outline being defined by a double wall of dry-built masonry. In addition to this peculiarity of their external form, they also possess the peculiarity of being provided with an internal chamber, placed usually in the higher end of the structure, to which access is obtained by a passage of considerable length. The chamber is subdivided by partitions of slabs, and its roof is formed of dry-built vaulting. In the totality of their peculiar features they differ from all constructions of similar purpose, and constitute a specific group, stamped with the characteristics of a strongly-marked individuality. But in their essential characteristics, they are easily recognisable as outlying examples of a general type, whose area is not confined to Scotland, although it is not known to extend beyond the bounds of Britain. A considerable number of examples have been more or less completely investigated in England, chiefly in the counties of York, Wiltshire, Somersetshire, and Gloucestershire.[1] They are immense mounds varying from 100 or 200 to 300 or 400 feet in length, from 30 to 80 feet in breadth, and from 3 to 10 or 12 feet in elevation. They usually lie east and west, having the higher end to the east, and the primary interments under the higher end. They contain deposits of many human skeletons, with bones of animals, and evidences of funeral feasts. In the south of England the burials in them are mostly unburnt, while in the north cremation seems to have prevailed. Manufactured articles are by no means numerous in their deposits, but, when they do occur, they consist chiefly of flake knives and scrapers of flint, and leaf-shaped arrow-heads of the

[1] "In no county of England are Long Barrows so numerous as in Wiltshire, where I count as many as sixty of these large grave-mounds, of which eleven in the north of the county are chambered, while there are thirteen with chambers in Gloucestershire, three in Somerset, and one in Berkshire."—Dr. Thurnam, in *Archæologia*, vol. xlii. p. 169.

same material, with fragments of pottery,—dark-coloured, hard-baked, round-bottomed vessels, sometimes with rudimentary ear-shaped handles, and rarely ornamented.[1]

One, called the West Tump Barrow, in the Cotteswold Hills, Gloucestershire, recently excavated by Sir John Maclean, measures 149 feet in length, 76 feet wide at the one end, and 41 feet at the other, its greatest elevation being 10 feet 3 inches. It is slightly horned at the wide end, which looks to the south-east, but it shows the peculiarity, which is common to all the English examples, of having no such projections at the narrow end. The external wall, which defines the structural ground-plan, is still standing to a height of 3 feet. Entering from one side of the structure is a passage leading into the chamber, in which the remains of many burials were found. In singular agreement with the character of the Caithness burials, no implements, ornaments, or pottery were found, with the single exception of a well-formed leaf-shaped arrow-head of flint, which was found in the passage leading to the chamber.[2] Another cairn of the same character, at Uley, in the same district, is 120 feet long, 85 feet in greatest width, and 10 feet high. Its projections at the wide end, answering to the horns of the Caithness cairns, are doubly convex in

[1] Describing the Long Barrow at Upper Swell, in Gloucestershire, Professor Rolleston says :—"This Barrow may be taken as a fairly illustrative specimen of the horned variety of Long Barrow—a variety of the tumulus of the Non-metallic Period, which is represented in Caithness, as described by Mr. Joseph Anderson, as well as in the south-west of England, and found to contain these interments similarly arranged, and pottery and implements of a similar type and rudeness to those which we have found here."

[2] See the descriptions of these Horned Long Barrows of Gloucestershire, by Sir John Maclean (with plans and drawings), in the *Transactions* of the Bristol and Gloucestershire Archæological Society, vol. v. pp. 86, 201 ; Dr. Thurnam's paper on Long Barrows, in *Archæologia*, vol. xlii., for those of Wiltshire ; and Canon Greenwell's *British Barrows* for those of Yorkshire, etc.

their outlines, giving to the ground-plan the appearance of an extremely elongated heart-shaped figure. Between these projections, as in most of the Caithness examples, is the entrance to a chamber, 22 feet long, 4½ feet wide, and 5 feet high. Another cairn at Ablington, in the same district, is 270 feet long, 100 feet wide, and 12 feet high; its base defined by a double wall, faced only to the outside, a feature which we have seen to be characteristic of the Caithness examples. Another, at Bela's Knap, 197 feet in length, 75 feet wide, and 12 feet high, had also an elongated heart-shaped form, with several chambers entering from the sides. Others, at Upper and Nether Swell, Avening, and Eyford, exhibit more or less of the same general character. In view of the excessively pronounced peculiarities of that character, there is no escape from the inference that they are all the work of one race of men. In the words of the late Professor Rolleston, "The peculiarities of a Horned Cairn are such that it is impossible to imagine that they do not indicate to us that one race of man, and one only, must have combined them as they are combined. And their geographical distribution shows with equal conclusiveness that of whatever stock that race may have been, they were a homogeneous people spread over the whole area of Britain."

LECTURE V.

CHAMBERED CAIRNS OF ARGYLL, ORKNEY, ETC.

In this Lecture I shall describe first a series of chambered cairns lying to the south of the Caithness group, in the county of Argyll; second, a series of chambered cairns lying to the north of the Caithness group, in the Orkney Isles, for the purpose of comparing their characteristics and contents with those of the typical group; and, lastly, I shall notice briefly a variety of chambered cairn occurring in Strathnairn, which, by the peculiar feature of an encompassing circle of standing stones, appears to present a transitional form between the types of the unencircled chambered cairn of the Age of Stone and the encircled grave-ground and unchambered cairn of the Age of Bronze.

In 1871 Dr. R. Angus Smith explored a large chambered cairn at Achnacree, near Loch Etive, Argyllshire.[1] In form the cairn was approximately circular, 75 feet in diameter, and rising to a height of 15 feet in the centre. There were traces of an encircling trench and embankment at a distance of about 30 feet from the exterior base of the cairn. The

[1] A detailed account of his explorations in Argyllshire was given by Dr. Angus Smith in the *Proc. Soc. Antiq. Scot.*, vol. ix. p. 396, and also in a separate work, subsequently published, and entitled *Loch Etive and the Sons of Uisnach.*

entrance to the interior faced the south-east, and the chamber was reached by a passage about 28 feet in length, 2 feet wide, and 3½ feet high, lined throughout with flat slabs, and covered with lintels. The constructional features of the chamber and passage are shown in the ground-plan and section, Fig. 260. The chamber resembled that of the Caithness cairns in being triply divided, but differed in the manner of the division. In this case each of the three compartments of the triply divided interior space formed a separately roofed and walled chamber, the second compartment entering by a doorway with a raised sill in the back of the first, and the third entering similarly from the back of the second. The passage decreased slightly in height from the entrance inwards, so that at the entrance into the first division of the chambered interior it measured only about 2 feet 2 inches square. The first of the three compartments of the internal chamber measured on the ground 6 feet by 4 feet. The walls were formed of flat slabs, set on edge in the lower part, with dry walling over them. The upper layers of this dry walling overlapped each other towards the interior, so as to bring the space to be covered in to an area of 5 feet 4 inches by 1 foot 10 inches, at a height of 7 feet from the floor. The roof was then finished by a single covering stone of great size. The other two compartments are of smaller area, and present no overlapping of the upper parts of the walls, but are simply covered in at a lower elevation by large flat slabs.

The floors of the three divisions of the chamber were covered with loose stones. There is no distinct record of their contents, so far as relates to the burial deposits, beyond the fact that in the earthy layer which formed the floor there were found a number of fragments of urns of peculiar form, which are fortunately preserved. One of these urns (Fig. 261) is almost entire. It is formed of a fine dark-coloured, hard-

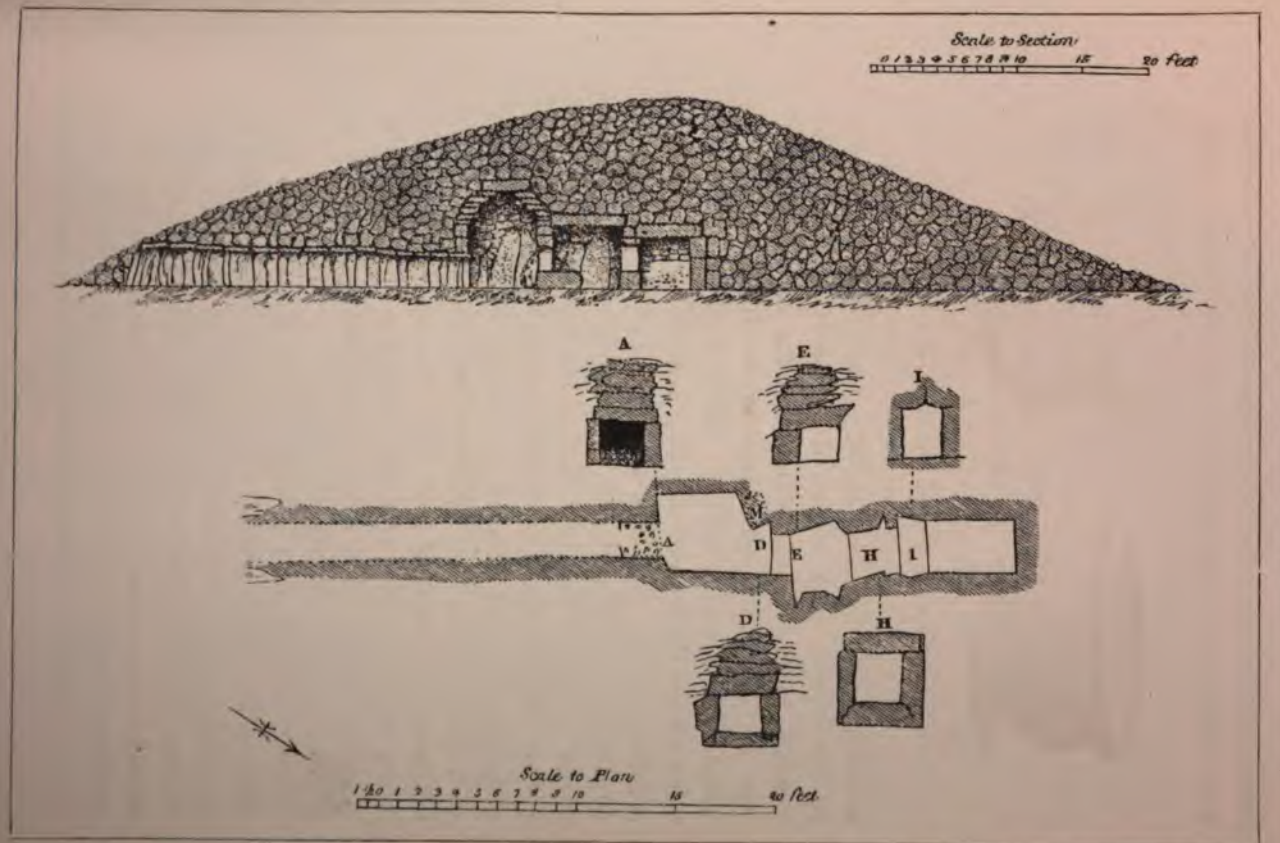


Fig. 200.—Section of Cairn at Achnacree, Argyllshire, with enlarged Ground-plan and Sections of its Chamber and Passage.

baked paste, with little or no intermixture of grit. It is a wide-mouthed, thick-lipped, round-bottomed vessel,

Figs. 261, 262.—Urns from the Chambered Cairn at Achnacree, Argyllshire (4 inches and 3¼ inches in height).

measuring 7 inches in diameter and 4 inches in depth. Its broad flattened rim is slightly bevelled outwardly, and recurved below. It is destitute of ornamentation, but the smooth exterior surface has the appearance of being slightly scraped vertically. A second urn (Fig. 262), of which only a few of the fragments were recovered, exhibits the same peculiar form, but with more upright sides, and two exterior projections near the spring of the rounded bottom. A third urn of larger size, but of the same round-bottomed form, has a broad bevelled lip, and is marked by a series of vertical scorings or scrapings all over its exterior surface. In form and character it closely resembles that shown in Fig. 263 from another Argyllshire cairn, next to be described.

In October 1864 a large cairn at Largie, near Kilmartin in Argyllshire, was opened by Rev. Canon Greenwell of Durham.[1] The cairn had been a very large one, with a diameter of upwards of 130 feet, but the greater part of the stones had been removed for walls and drains. In the centre was a chamber lying nearly north and south. Its length was 19 feet, its breadth somewhat less than 4 feet, and its height about 9½ feet. The sides were formed of large slabs, with portions of dry walling of smaller stones, and the roof

[1] *Proc. Soc. Antiq. Scot.*, vol. vi. p. 336.

lintelled over with long slabs. The south end of the chamber was formed of a single large slab, and at the opposite end two large upright slabs projected from the side walls, leaving a kind of doorway between their opposing edges. The great dilapidation of the cairn may account for the absence of a passage leading into the chamber from the outside of the cairn. The chamber was divided into four compartments by divisional slabs set across the floor. Three of these had been previously disturbed. In the fourth and largest compartment there was a cist placed on the floor in one corner,—a circumstance previously noticed also in one of the Caithness cairns.[1] In this case the cist was open, and rifled. The substance of the floor of the compartment consisted of a layer of dark earthy matter, plentifully interspersed with burnt bones, human and animal. In it were also found a number of flakes, knives, and scrapers of flint, and five barbed arrow-heads of the same material, unburnt. Of the arrow-heads three were perfect, and two broken,—all beautifully and

Fig. 263.—Urn found in the Chambered Cairn at Largie, Kilmartin, Argyllshire (6¼ inches in height).

delicately chipped. Close to the side of the chamber was found an urn (Fig. 263) of the same form and character as those from the cairn at Achnacree. It is, however, con-

[1] At Yarhouse, described in the previous Lecture, p. 239.

siderably larger, being 6¼ inches high, and 12⅜ inches wide at the mouth. In shape it is a wide-mouthed, round-bottomed vessel, with upright sides, a broad flat lip bevelled outwardly and recurving below. It is made of a fine, dark-coloured, hard-baked paste, and the whole surface is ornamented with vertical flutings or scrapings, which meet in the centre of the rounded bottom of the vessel.

At Kilchoan, in the same county, in 1864, a chambered cairn was opened by Rev. R. J. Mapleton. The bulk of the cairn had been previously removed, and its height and diameter are therefore unknown. Its remains were traceable for 36 feet on the south side of the chamber, so that it had probably exceeded 70 feet in diameter. The chamber was 14 feet 8 inches in length, 8 feet 3 inches in height at the highest part, 4 feet 8 inches wide at the further end, and 2 feet 8 inches at the entrance. Its sides were formed of massive slabs, the roof also was covered in by slabs of great size and weight, partially supported on struts formed by long slabs set on end behind the side walls. The middle pair of struts carried a cross-bearing stone, 6 feet 10 inches long and 20 inches thick, placed under the heavy end of the largest roofing slab. The chamber was divided into three compartments by slabs standing on edge across the floor, but not reaching to the roof. The floor of the chamber contained deposits of burnt bones, with flint knives, scrapers, and flakes, and fragments of a well-made urn with a raised moulding and vertical flutings.

In this group of Argyllshire cairns, we recognise the same essential features of construction and contents that give typical character to the Caithness cairns. The exterior characteristics are wanting, but this may be due in some cases to the dilapidation of the structures themselves, and in others to incomplete examination. The interior characteristics are that the cairns are chambered and the

chambers furnished with access from the exterior by a passage. The chambers are subdivided into compartments, and the roofs are partly vaulted and partly covered with great flat slabs. The contents of the chamber floors are burials after cremation, accompanied by urns of a peculiarly fine, dark-coloured, and hard-baked paste. The urns themselves are wide-mouthed, thick-lipped, round-bottomed vessels, with a peculiar ornamentation of vertical scrapings or flutings over the whole exterior surface. No traces of implements of metal are present, and any implements or weapons that have been recovered from the deposits are knives, scrapers, and arrow-heads of chipped flint.

To the north of Caithness there is, in the Orkneys, a group of cairns of a singularly interesting character. They are few in number, but very remarkable for their magnitude and the special characteristics of their construction. The best known of these is the chambered mound of Maeshowe, situated nearly a mile to the east of the great stone circle of Stennis, on the opposite side of the Loch of Stennis. Externally it has not the appearance of a cairn, but of a mound, 92 feet in diameter and 36 feet in height, surrounded by a trench 40 feet wide, and still in some parts about 8 feet deep. The mound covers an internal construction of stones, containing, as shown in the annexed ground-plan and section (Fig. 264), a central chamber, about 15 feet square, to which access is provided by a passage 54 feet in length. The doorway by which the passage enters the chamber is 4 feet 8 inches high, and 3 feet 4 inches wide, decreasing in height and width as it proceeds outwards, till at the exterior entrance it becomes only 2 feet 4 inches wide. The original height of the exterior entrance is unknown, as the covering slabs were wanting for 22½ feet inwards from the exterior entrance. About 30 feet outwards from the chamber there are checks for a door, and immediately behind them a recess

in one side of the passage, 2 feet deep and 3½ feet in height and width, in front of which there was found a slab, which might have been used as a door.[1] From this doorway inwards, the passage is 4 feet 4 inches high, and 3 feet 3 inches wide, continuing of that height and width for 26 feet, when it is again narrowed to 2 feet 5 inches by two slabs placed upright against the walls to form checks for another door.

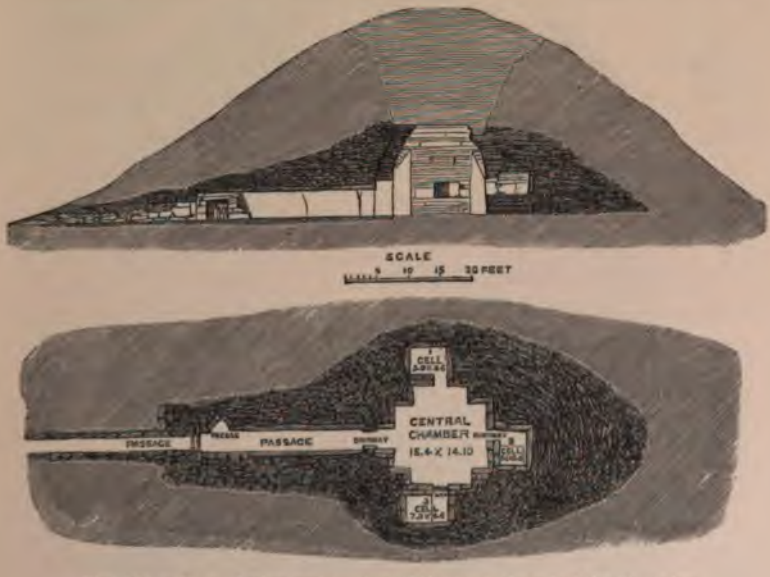


Fig. 264.—Ground-plan and section of the central part of the Tumulus of Maeshowe, with the Chamber.

The chamber, which measures on the floor 15 feet 4 inches by 14 feet 10 inches, was about 13 feet high when excavated by Mr. Farrer in 1861, but the upper part had fallen in, and the original height may have been nearly 20 feet. The passage enters in the middle of the west side, and in the centre of the east, north, and south sides of the chamber are

[1] Maeshowe is the only chambered cairn in Scotland in which this arrangement occurs.

openings about 2½ feet square placed at a height of about 3 feet above the floor, and giving access to small oblong cells about 3 feet high, 4 feet 6 inches wide, and varying from 7 feet to 5 feet 6 inches in length. The stones of which the chamber is built (see Fig. 265) are undressed slabs and blocks of the hard, close-grained, and thin-bedded claystone

Fig. 265.—View of the Central Chamber in Maeshowe, looking towards the passage (15 feet in length by 14 feet 10 inches in width).

of the district, which rise from their beds in rectangular blocks and slabs with clean vertical joints. This natural peculiarity of the stone has enabled the builders to fit them closely together, and to build their walls with nearly as smooth and vertical surfaces as if the stones had been hewn for the purpose. In the corners buttress-like projections are placed, to assist in carrying the overlapping stones of the

roof. These are, for the most part, single stones of the requisite length, but of varying thickness, laid upon each other, so that each successively projects beyond the stone below it. As has been said, the roof had fallen in, or had been partially broken down at some time previous to the excavation in 1861. In point of fact, there are indications which lead to the conclusion that the chamber was broken open, probably in the hope of finding treasure, in the twelfth century.

Within the range of from 3 to 11 feet above the floor, the walls of the chamber are thickly covered with Runic inscriptions, comprising in the aggregate more than nine hundred letters. The forms of the letters are those of the later variety of the Scandinavian Runes, which, as Professor Munch informs us, are never older than about A.D. 1150. They are but slightly scratched on the stones, and the majority of the inscriptions are such as men seeking the shelter or concealment of the broken chamber might scribble from mere idleness.[1] But one of the longer inscriptions is of greater interest, because it supplies the information of the breaking open of the mound, and gives an indication of the time when this was done. It states that the Jorsala-farers—the pilgrims to

[1] One inscription states that "Thatir the Viking came here to weary." Another gives the whole letters of the Runic alphabet. Others consist simply of a man's name, with the formula, "wrote this," or "carved this," as "Hermund Hardaxe carved these Runes." One tells us what was thought of the origin of the mound itself by these scribblers. Their tradition was that it was Lodbrok's sorcery hall. Ragnar Lodbrok was a mythical hero, who filled the place in Scandinavian legendary lore which was given by the Celts in their popular tales to Fingal, and by the English in their romantic poetry to King Arthur. The meaning of this attribution of the mound to Lodbrok as a sorcery hall is therefore that the people who ascribed to it this fabulous origin knew nothing of its real history. Translations of the whole of these inscriptions will be found in the *Proceedings of the Society of Antiquaries of Scotland*, vol. v. p. 247, and in Mr. Farrer's privately printed work on Maeshowe, which gives facsimiles of the inscriptions themselves.

Jerusalem—broke open the Orkahaug in the lifetime of the blessed Earl, and that there was (supposed to be) much treasure hidden in it, but that the treasure had been carried away before the Jerusalem men broke into it. The name "Orkahaug" occurs once in the *Orkneyinga Saga* in such a connection as would fit this locality.[1] It occurs nowhere else unless in this inscription on the wall of the chamber, and here it seems to be the name which was then applied to the mound of Maeshowe. Earl Rognvald, the saint, who died in 1158, and was canonised, is the "blessed Earl" of the inscription. In 1153 he performed the pilgrimage to Jerusalem. The Saga tells the names of the Orkneymen who were to go with him, and that they occupied two winters in making their preparations for the journey. In the spring of 1152 Earl Rognvald went to Norway, and gathered a band of his friends and their followers there, who came over with him to Orkney. There they spent the winter of 1152-53, until the expedition was ready. In the enforced idleness of such a body of rough adventurers, the breaking open of such a mound as Maeshowe would be a welcome pastime.[2] Among

[1] "Earl Harold commenced his voyage (from Caithness) to the Orkneys during Yule-tide. He had four ships and a hundred men. Two nights he lay under Gareksay. They landed in Hafnarvag in Hrossey (the mainland isle), and the thirteenth day of Yule-tide they walked to Fiord (Firth). They spent the Yule-Holiday at Orkahaug. There two of their men were seized with madness, which retarded their journey."—*The Orkneyinga Saga* (Edinburgh, 1873) p. 159.

[2] Barrows and cairns at a very early time attracted treasure-seekers. The Anglo-Saxon poem of *Beowulf* gives a vivid description of a chambered tumulus, with its treasure of weapons and rich ornaments, and vessels of heathen gold, watched over by a dragon. The "breaking of a how" had always been a famous exploit in the estimation of the Northmen. The earlier Sagas refer to such adventures as proofs of the greatest daring, for the breaking of the tomb and spoiling of the treasure was never completed without a personal encounter with the *Haugbuie*—the tenant of the tomb,—who seized his weapons and started up to confront the despoilers with his supernatural strength. The "Hogboy" of Maeshowe still lives in the imagination and legends of the country people. The *Annals of*

the names that are carved on the stones of its chamber are those of Ingibiorg, Ingigerd, Thorir, Helgi, Ingi, and Arnfinn. All these are names of persons who are mentioned in the Saga as living in Earl Rognvald's time, and several of them were closely connected with him.[1]

But this episode in the later history of the chambered mound of Maeshowe has no bearing whatever upon the

Ulster record the breaking of the great tumulus at Dowth on the Boyne, by the Northmen. Royal licences were sometimes granted for the digging of barrows in England, and, so late as 1344, Thomas of Walsingham records the slaying of the dragon that guarded a barrow, and the recovery of a great treasure of gold by the retainers of the Earl of Warrenne.

[1] There are other indications which point to this period as the probable date of these inscriptions. The forms of the letters accord with the style used in Norway in the first half of the twelfth century, and the orthography almost exactly resembles that of the earlier Icelandic MSS. from about 1150. Two of the inscriptions are associated with crosses. One, on the great buttress next the doorway on the north side of the chamber, contains the name Thorir, and beneath it a Latin cross with circular dots at the extremities. Another, on the corresponding buttress at the south side of the chamber, has the words, "Ofram Sigurdson carved these Runes," surrounded by six equal-armed crosses, and a seventh in the centre of the inscription. On the edge of the same buttress is the figure of a nondescript animal, carved with much spirit, but in a purely conventional style. In form and attitude it somewhat resembles the griffin of the West Highland crosses, but the style is more archaic, and its characteristics are more akin to those of the later Celtic manuscripts. It stands with its head thrown back, its tongue protruding, and one fore-paw uplifted. Its body is covered with scale-like markings similar to those which are characteristic of the nondescript animals employed in the decoration of the Manx crosses of the twelfth century. The tail of the animal is represented as curving under it, and passing through the body upwards, to terminate in a complicated scroll-like ending. This is a Celtic peculiarity, conspicuous in the later Irish manuscripts. Lastly, it has the Celtic eye—backwardly pointed, forwardly rounded. The eye of the Scandinavian conventional beast is invariably the reverse of this—backwardly rounded, forwardly pointed. This characteristic is constant in the examples of Scandinavian conventional beasts carved on the Rune-inscribed monuments of Norway and Sweden. The general bearing of the whole of the indications afforded by the characteristics of the inscriptions, and the carvings which are associated with them, is towards their attribution to a twelfth-century date.

questions of its origin and purpose. As I have said, the indications of that purpose, and the evidences of its earlier history, in all probability lay hidden in its floor, and have not been placed on record either by its earlier or later explorers. But the character of the structure itself, its chamber and passage, and the vaulting of its roof, link it with the class of structures which I have been describing, and prevent its being linked with any other typical class.[1] I have therefore no hesitation in concluding that the structure of Maeshowe is closely allied by its essential characteristics to the type of chambered cairn which we have traced on the mainland of Scotland from Caithness to Argyll. But it belongs to a variety of that type which is strongly differentiated. It has the passage, the chamber, and the vaulted roof that are the common features of the type; it has also the subdivision of the interior, which is the prominent characteristic of the majority of the examples that have been described; but it differs most strikingly in the manner in which that subdivision is accomplished. In most of the Caithness cairns, and in some of the Argyllshire examples, the subdivision is accomplished within the area of the chamber itself, by slabs set transversely across the floor. In one of the Caithness cairns (Fig. 256), a small side cell is constructed, opening off the chamber. This is the method adopted in Maeshowe. The Caithness cairn has a subdivided chamber, with a cell off one side; Maeshowe has an undivided chamber, with a cell

[1] The class of sepulchral structures characterised by an internal chamber constructed of stone, with a vaulted roof, and having a passage leading into it from the outside, does not exist in Norway. It is not uncommon in Ireland, where the largest examples are found. Chambered sepulchral mounds or cairns, with passages leading into them, are found in Denmark and Brittany, but they differ from those in Scotland and Ireland, in being roofed with flat stones of enormous size, and not vaulted. But, whatever may be the differences in the construction of the chamber, all the chambered cairns of the north-western area of Europe appear to belong to the Stone Age.

off each of its three sides, the fourth giving access to the passage. This development however has some title to be classed as a local variety.

On the Holm of Papa Westray, a small uninhabited island lying off the west side of Papa, there is a very peculiar structure on the highest part of the island, which here rises to an elevation of about 60 feet. It is an oblong cairn with rounded ends, 115 feet long, 55 feet broad, and 10 feet high. It is a chambered cairn, but in the form and arrangements of the chamber (shown in the accompanying ground-plan, Fig. 266) it presents certain remarkable peculiarities. The entrance is on the east side, near the middle of its length. It is a low and narrow passage, 1 foot 10 inches wide, 2 feet 8 inches high, and 18 feet in length. It is lintelled over by large oblong flags, which are mostly placed on edge for strength; the last lintel at the inner end measures 4 feet in length, 2½ feet in breadth, and about a foot in thickness. The chamber to which the passage gives access is long and narrow, measuring 67 feet in length, by about 5 feet in width throughout. It is divided into three compartments by two partition walls thrown across towards the ends, the centre compartment being 45 feet in length, the larger of the two end compartments 12 feet, and the smaller 7 feet in length. Opening off the main chamber are a series of small cells, irregularly formed, and roofed by overlapping stones. Off the central compartment there are, on the one side, one double and two single cells; and on the other side is the same arrangement, but in reverse order. Off each of the three sides of each of the end compartments there is a single cell. The internal arrangements of this cairn thus consist of a principal chamber divided into three compartments, and surrounded by ten single and two double cells opening off the main chamber. The side cells average between 4 and 5 feet in length, 3 feet in width, and from 3 to

5½ feet in height. Their doorways are on the level of the floor of the main chamber, thus differing from the side cells in Maeshowe, which are elevated 3 feet above the floor. The

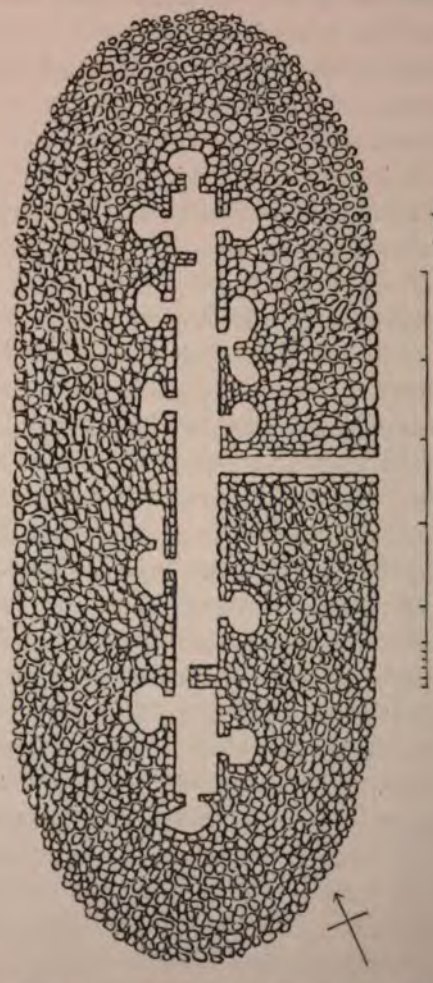


Fig. 268.—Ground-plan of Chambered Cairn on the Holm of Papa Westray, Orkney.

doorways here vary from 18 inches to 2 feet in width, and from 20 inches to 2 feet in height, so that the cells can only be entered by squeezing in on all-fours. The main chamber is

from 9 to 10 feet in height, but the upper parts of the walls are gone, although the height could not have been much greater. Captain Thomas remarks that when the structure was excavated by him in 1851,[1] the convergence of the side walls to within 2 feet 8 inches of each other still remained. When I saw it in 1872 it was much dilapidated, and the convergence in some places scarcely perceptible.

As in the case of Maeshowe, the excavation of this remarkable structure was absolutely destitute of results, so far as the evidence to be derived from an investigation of the contents of the floors is concerned. No implements or other relics were found, and we are left to draw conclusions as to the character of the structure from its typical characteristics alone. But these are in themselves sufficient to determine conclusively its typical relations. It possesses the characteristics which are typical of the Caithness cairns, though strongly differentiated in its details. It is a chambered cairn, with a subdivided chamber; it resembles them also in possessing a definite external outline, a facing wall 2 to 3 feet in height being still traceable along the side next the entrance. It possesses the tripartite character of the Caithness cairns, in combination with the special character given to Maeshowe by the construction of cells in the walls of the main chamber. It has the low narrow passage characteristic of the "house of the dead," and it stands conspicuously, like the majority of cairns, on the highest point of the island, so as to be seen afar of the passers-by on land and sea.

At Quoyness, in Elsness, in the island of Sanday, Orkney, a large chambered cairn (Fig. 267) was excavated by Mr. Farrer and Mr. Petrie in 1867.[2] The cairn is close

[1] "Celtic Antiquities of Orkney," in *Archæologia*, vol. xxxiv. p. 127.

[2] It is described, but very imperfectly, by Mr. Farrer in the *Proceedings of the Soc. Antiq. Scot.*, vol. vii. p. 398. The ground-plan has been drawn by Sir H. Dryden from Mr. Petrie's measurements and notes.

to the sea, and only a few feet above high-water mark. It had been considerably reduced by the removal of stones for various purposes before its investigation by Mr. Farrer. Its diameter was about 63 feet, and its greatest height about 12½ feet. From the quantity of débris about and around it, there is no doubt that originally it must have been very much larger. The exterior outline of the cairn, which was

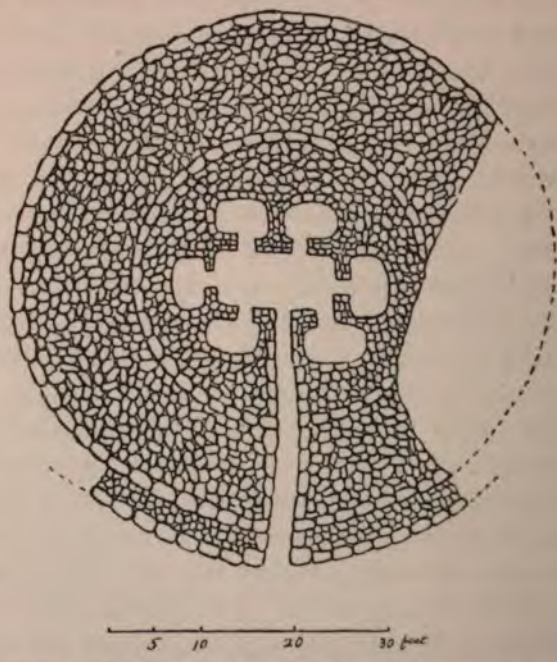


Fig. 267.—Ground-plan of Chambered Cairn at Quoyness, near Elsness, Sanday, Orkney.

circular in form, seemed to have been defined by a double wall, faced only to the outside, after the manner of the chambered cairns of Caithness. The face of the inner surrounding wall was about 3 feet 10 inches from the external wall face, and both were still about 4 feet high. On the south-east side of the cairn was the entrance to the passage.

The passage itself was 24 feet in length, 3 feet high, and 21 inches wide, roofed throughout its length by flat lintels laid across, and slightly widening and increasing in height towards the chamber. The chamber in the centre of the cairn was of oblong shape, and nearly rectangular, 12½ feet in length, 5½ feet wide, and the walls still standing to a height of 12 feet. The roof of course was gone. Opening off this chamber were the entrances to six smaller, irregularly oval cells. These entrances were from 18 to 23 inches wide, and but little over 2 feet in height. The cells to which they gave access were placed two on each of the long sides, and one on each of the ends of the central chamber. Their walls rose with an inward curve to a height of from 5 to 6 feet, and at that height the roofs were closed in with flat stones. The two largest of these cells are 7 feet 2 inches in length by 4 feet 8 inches in breadth, and 6 feet by 4 feet respectively; the others are slightly smaller. At the distance of 12 feet within the external wall there was a retaining wall within the mass of the cairn surrounding the chamber, similar to that in the cairn at Ormiegill, near Ulbster, in Caithness.[1] The structural characteristics of this cairn thus combine the peculiarities of two local groups: the double external walling, defining its circular outlines, and the retaining wall surrounding the chamber, are features of the Caithness group, and the oblong rectangular chamber with smaller cells opening from its sides are features of the Orkney group. The floors of the chamber and its surrounding cells do not appear to have been examined with sufficient care,[2] but the nature of the relics that were found, when taken in connection with the general features of the structure, is sufficient evidence of the sepulchral character of

[1] See the description and figure of this cairn, p. 245.

[2] The relics from the chambered cairns are mostly found imbedded in the substance of the floors, sometimes at a considerable depth.

the cairn. In three of the smaller side cells quantities of unburnt human bones were found, and in the central chamber similar remains were also found. Dr. Thurnam says of them: "There are fragments of twelve or fifteen skulls, some male and some female, some of them children or quite young persons; one or two of them have the appearance of having been cleft prior to being interred, and the teeth in the lower jaws are much corroded." Among the human bones some bones of animals were observed, which are described as "apparently of the ox." No pottery is mentioned, but it is not stated that it was looked for under the surfaces of the floors. Three objects of human workmanship were found in the course of the excavations. The precise position of their occurrence is not recorded; but it is noted by Mr. Petrie that one of the two stone implements was found in one of the side cells. It is of dark bituminous schist (Fig. 268), $4\frac{3}{4}$ inches long and $2\frac{1}{2}$ inches diameter, with a longitudinal groove and

Figs. 268, 269.—Implements of Polished Stone from the Chambered Cairn at Quoyness.

double-pointed ends. The other stone implement (Fig. 269), of the same dark-coloured schist, is three-pointed, and has two grooves passing round the central ridge opposite to the longest of its three projections. Its appearance is suggestive

of the intention of its being fastened to the end of a handle, in the line of its longest projection, by cords passing round the grooves. The third implement (Fig. 270) is of bone, 7 inches in length, round and tapering, the surface com-

Fig. 270.—Bone Implement from the Chambered Cairn at Quoyness (7 inches in length).

pletely polished, and having a curious projection on one side. All these implements are unique in their forms, and I have nothing to say either as to their probable use, or whether they may be or may not be of the time of the original interments in this chambered cairn. But the cairn itself exhibits, both in its structural features and in the character of its contents, a series of characteristics which sufficiently indicate its typical relationship.[1]

At Quanterness, near Kirkwall, on the north side of Wideford Hill, are the remains of a structure of the same typical character (Fig. 271). Externally it presented the form of a truncated cone, 128 feet in circumference at the base, and 14 feet in height. A long narrow passage led from the exterior into a central chamber of oblong form, 21½ feet long, 6½ feet broad, and 11½ feet high, constructed and roofed in the manner common to all those that have been described. Off this central chamber were a series of six side cells, two opening off each of the long sides of the chamber, and one off each of its ends, precisely in the same manner as the

[1] Mr. Farrer and Mr. Petrie have both suggested the possibility of the cairn at Quoyness having been originally a broch, within the central area or court of which a "Pict's House" was subsequently constructed. But there is no essential feature of a broch apparent in the structure, and all its features are essentially those of the chambered cairns. The relics recovered from it are such as are characteristic of the sepulchral cairns, and all the objects that are characteristic of the contents of the brochs are absent from its contents.

side cells of the Quoyness example. They differed from the side cells opening off the central chamber of Maeshowe, in being placed on the same level as the floor of the central chamber. The doorways, or openings leading into them from the central chamber, were about 2 feet square. The

Fig. 271.—Ground-plan of Chambered Cairn at Quanterness, near Kirkwall, Orkney.

floors of the central chamber and side cells, which were of dark earthy clay, were plentifully charged with bones of men and animals, unburnt, but mostly very much broken, though in one of the cells an entire human skeleton was found.

On the western declivity of Wideford Hill, overlooking the Bay of Firth, another structure of the same description was explored by Mr. George Petrie in 1849. Its external appearance was that of a circular mound of moderate height, and about 45 feet diameter. It contained a central chamber,

10 feet long, 5 feet broad, and 7½ feet high, roofed by the overlapping of the stones of the side and end walls till the top was contracted to a space of 7 feet long and 2 feet wide, which could be easily spanned by stones laid across. The side cells, which were only three in number, are placed irregularly round the main chamber. The side cells are about 6 feet long by 4 feet broad, and 6 feet high, differing only by a few inches in their dimensions. They are roofed in the same manner, by the walls converging until the roof can be covered by a stone about a foot square. A bounding wall, faced only to the outside, of which 2 feet of the height still remained, surrounded the whole cairn at the base—a feature which we have so often remarked in the Caithness cairns. The chamber and side cells contained great quantities of bones of the common domestic animals—the horse, ox, sheep, and swine, just as the chambers of the Caithness cairns did, but, as in the cases of Maeshowe and the oblong cairn on the Holm of Papa Westray, no human remains were noticed.

In this group of Orkney chambered cairns there is a striking similarity of feature. They all possess a central chamber with more or fewer side cells opening off it. This gives them the distinctive character of a local variety of the general type. In the main, they are the same as the cairns of Caithness and Argyll, having internal chambers accessible by a passage from the outside, and their exterior outline defined by a bounding or retaining wall.[1] But there are other sepulchral structures in Orkney which present features more closely allied to those of the Caithness cairns. On the Holm of Papa Westray, on a low part of the Holm lying to the north-west

[1] This exterior bounding wall is not noticed in all the descriptions of the different examples, but Mr. Petrie, in a general description of these structures, while he had no hesitation in concluding them to be sepulchral, states that "in every instance that has come under my observation, they have been surrounded by a facing or wall about 2 feet high."

of the great oblong chambered cairn, there is another cairn of smaller size, which presents the tripartite division of the chamber, so characteristic of the Caithness cairns. The structure was greatly dilapidated before I saw it in 1872, but what remained was sufficiently distinct to enable me to recognise it at once as a chambered cairn of the Caithness type.[1] The chamber was 12 feet long and 6 feet wide, and was divided into three compartments by upright flagstones projecting from each of the side walls partially across the floor, and directly opposite to each other. The whole floor of the chamber, in all the compartments, was strewed with bones of animals, and on the floor, and imbedded in it, were the remains of at least ten human skeletons, unburnt. The animal bones were those of the common domestic animals, including goats and birds, but with a remarkable abundance of red-deer remains—no fewer than eleven pairs of antlers having been enumerated, or something like a head of stag's horns for each person interred.

Another cairn in the island of Burray, which was about 60 feet in length, had crescentic endings, with a facing wall like those of the horned cairns of Caithness. It contained a central chamber, about 12 feet in length and 8 feet wide, divided into three compartments by upright flagstones projecting from the side walls across the floor, opposite to each other, leaving a space of about 2 feet between their edges for a passage up the centre of the chamber. The entrance passage, leading from the outside of the cairn to the chamber, had been destroyed, and only a few feet of the height of the chamber walls remained. Remains of a large number of human skeletons, unburnt, were found in and upon the floor of the chamber. No fewer than ten human skulls were found in the first compartment, near the opening

[1] A ground-plan of the chamber of this cairn is given by Mr. George Petrie in the *Proc. Soc. Antiq. Scot.*, vol. ii. plate 3.

into the entrance passage. Remains of the common domestic animals were also found in abundance, no fewer than seven skulls of dogs having been identified among them.

A cairn at Bookan (Fig. 272), in the parish of Sandwick, and not far from Stennis, which was explored by Mr. Farrer in 1861, exhibits features in the arrangement of the chamber, which form a connecting link between the triply divided chamber of the Caithness group and the chamber

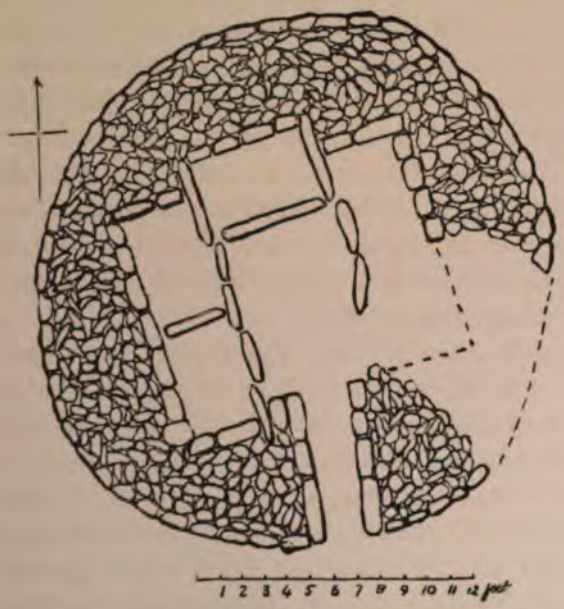


Fig. 272.—Ground-plan of Chambered Cairn at Bookan, near Stennis, Orkney.

surrounded by side cells, which is the prevailing variety in Orkney. The cairn was about 44 feet in diameter, and about 6 feet high, the upper part having been removed at some time previous to its examination. Eleven feet within the outer edge of the base the original bounding wall or facing of the cairn, which defined its circular outline, was

found entire in its lower courses to the height of a foot or more. The passage, which was 21 inches in width, and scarcely more in height at the entrance, led to a chamber almost square in form, with walls built in the usual manner, but with flagstones projecting into the area of the floor from all its sides, and other flagstones set at right angles to them. The area of the floor was thus subdivided into a central chamber, into which the passage led, surrounded by other cells separated from it by flagstones on edge. In the central chamber a flint lance or spear-head, and some fragments of clay urns, were found, but no human remains. In the surrounding compartments the remains of a number of human skeletons were found.

At Unstan, near the Bridge of Waith, Stennis, Orkney, a chambered cairn of very interesting character was recently excavated by Mr. R. S. Clouston. The cairn was situated on a little promontory projecting into the lake, and the part of the promontory on which it was situated was cut off from the land by a ditch. The extreme diameter of the mound or cairn was upwards of 50 feet, but within the irregular circumference of its base the usual double retaining wall was found, defining the original outline of an approximately circular construction 40 feet in diameter. The double external wall was traced for some distance on the north side of the cairn, the interval between the outer and inner walls being about 3 feet. On the south-east side of the cairn (Fig. 273) the opening of the passage was found. The passage, which was about 2 feet wide and 14 feet in length, led into an elongated chamber about 21 feet in length by 6½ feet in extreme width, narrowing to about 4 feet at the one end and 5 feet at the other. The chamber was divided into five compartments, by slabs placed on edge projecting from the side walls opposite each other, precisely in the same manner as in the Caithness cairns. The two end compart-

ments had each a third slab placed across the opening between the projecting slabs like a door, and the compartment at the south end had also a slab dividing it into two subdivisions longitudinally. From the centre compartment

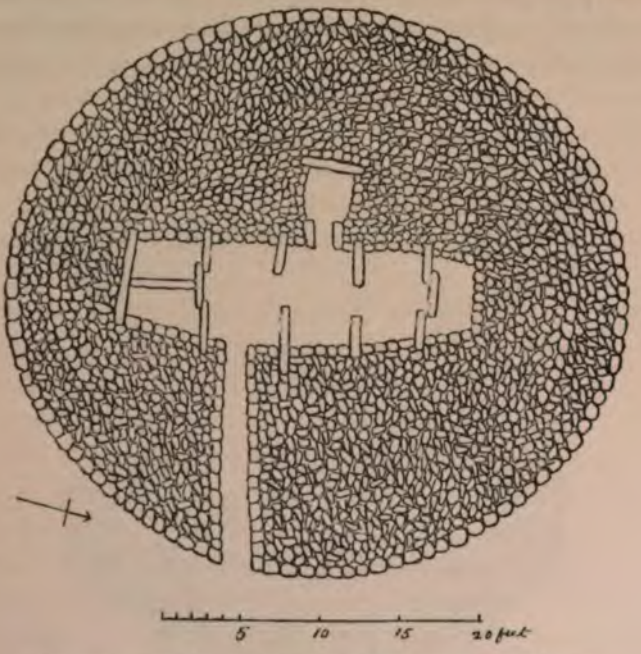


Fig. 273.—Ground-plan of Chambered Cairn at Unstan, Orkney (40 feet in diameter).

of the chamber a small side chamber opened on the west side, about 7 feet long by 3 feet wide. The two end compartments and the small side chamber were partially paved with rough flags. The sepulchral deposits in this chambered cairn present a marked resemblance to those found in the chambered cairns of Caithness and Argyll. In the floor of the chamber and the inner part of the passage there was found a large quantity of unburnt bones, human and animal. There was also evidence of cremation in the presence of

burnt bones and charcoal. The fragments of pottery found among the bones, or imbedded in the floor of the chamber and passage, were exceedingly numerous, and must have represented about thirty different urns. So far as they have been found capable of reconstruction, these urns are, for the most part, large, shallow, round-bottomed vessels, with more or less vertical rims, as shown in Fig. 274. This urn is 14 inches in

Figs. 274, 275.—Urns from the Chambered Cairn of Unstan, Orkney (14 and 13½ inches in diameter).

diameter, and 5 inches deep in the centre. It is well modelled and neatly made,—almost as evenly turned as if it had been thrown on the wheel. The paste of which it is composed is dark coloured, hard baked, and free from admixture of stones. The rounded under part of the vessel is thin, the upright rim slightly thicker, and the lip, which is bevelled from the inside outwards, expands to ¾ inch in thickness. There is no ornament on any portion of the

vessel except the vertical rim, which is 2½ inches high, and scored obliquely to right or to left in alternate triangular spaces. Another urn (Fig. 275), almost exactly similar in form and character, is 13½ inches diameter, and 4¾ inches deep in the centre. It is not circular, but slightly oval, and the vertical rim, which is only 2 inches high, has its lip almost flat and ⅝ inch in thickness. The ornamentation on the vertical rim of this vessel differs from that of the first urn only in the scorings of each alternate triangular space being parallel to the lip of the vessel, while the others are placed obliquely to left. A third urn of the same character (Fig. 276) is 11¾ inches diameter, and 4¼ inches deep in the

Figs. 276, 277.—Urns from the Chambered Cairn of Unstan, Orkney (11¾ and 9¼ inches in diameter).

centre, the lip flat, and ⅝ inch in thickness, the vertical rim 2¼ inches high, ornamented like the first, except that it has two horizontal lines carried round under the brim. A fourth urn of the same character, but smaller (Fig. 277), measures 9¼ inches diameter, and 3¼ inches deep in the centre, the lip flat, and ½ inch in thickness, the vertical rim 1½ inch high

and ornamented as the first, but with triangular spaces of longer base. The rims of two other urns, of 10¾ and 10½ inches diameter, are extremely thin, and both ornamented with triangular spaces similar to the second. A distinct variety of this form, with the rim slanting outwards, is indicated by several fragments with somewhat similar ornamentation. The largest vessel (Fig. 278) is of a reddish

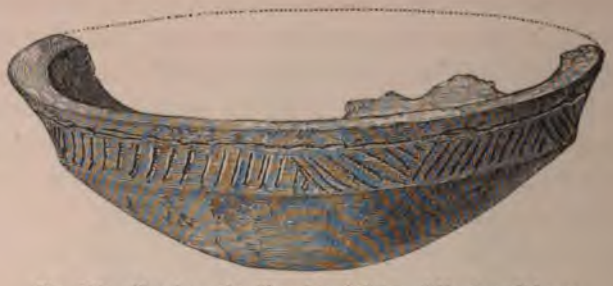


Fig. 278.—Urn from the Chambered Cairn of Unstan, Orkney (15½ inches in diameter).

paste, softer and more porous, and thicker in the body. It measures 15½ inches in diameter, and 5½ inches in depth in the centre, and has a slightly curved rim under a broad flat lip 1¼ inch across. The rim is slightly ornamented with scorings of oblique lines to right and left. A perfectly plain

Fig. 279.—Urn from the Chambered Cairn of Unstan, Orkney (9 inches in diameter).

vessel of oval shape (Fig. 279) measures 9 inches in its greatest diameter across the mouth, and 4 inches deep, the

sides bulging considerably, and then contracting to the rounded bottom. Another form of plain, unornamented urn, indicated by several fragments, seems to have had deep and almost straight sides and a rounded bottom. There appear to have been tall, can-shaped vessels, but as none show more than a small portion of one side, with an indication of curvature at the bottom, their precise form and proportions have not been ascertained. One flat bottom only was found, about 3½ inches diameter, but the upper part of the vessel has not been recovered. The prevailing type is therefore that of a round-bottomed vessel of a hard dark-coloured paste, with vertical brim, and thick flat or bevelled lip, and this is precisely the type which is characteristic of the chambered cairns of Argyll. The ornamentation in the Unstan pottery has more similarity to the style of the Bronze Age, but the cairn itself is chambered, and therefore of Stone Age type. The implements and weapons that were found in association with its sepulchral deposits were all of flint, and their calcined condition indicates that they must have passed through the fire. They form a very interesting and suggestive group. There are four leaf-shaped arrow-heads (two of which are shown in Fig. 280), and one with barbs and stem. The leaf-shaped arrow-heads are of large size, and well made, the shape inclining to the elongated lozenge with curvilinear butt. The fifth arrow-head, which is barbed, is of smaller size, and has suffered damage, but not to such an extent as to obliterate its distinctive form. There was also found a finely finished scraper (Fig. 281) of a form which is not at all common in Scotland, with both sides as well as the front bevelled to a cutting or scraping edge; and one of those rare implements of flint (Fig. 282), an elongated knife, with the edge ground smooth instead of being merely chipped. Such ground-edged knives have been found in other chambered

cairns in the north of Scotland, and the occurrence of this one in the Unstan cairn adds another link to the chain of

Fig. 280.—Flint Arrow-heads from the Chambered Cairn of Unstan, Orkney (actual size).

evidence which connects it and them with the sepulchral usages of the Age of Stone. Another flint tool found in the

Figs. 281, 282.—Scraper and Knife of Flint from the Chambered Cairn of Unstan, Orkney (actual size).

chamber of this cairn is of exceptional interest, inasmuch as it is the first recorded instance of its occurrence in connection with sepulture in Scotland. The recorded instances of its

occurrence are exceedingly few, and it has long been represented in the Museum by a single specimen. The present example (Fig. 283), from the chamber of the Unstan cairn, is formed of a long ridged flake, with the crown of the ridge split off, and greatly worn by use at both extremities. It belongs to the class of implements styled by Mr. Evans "fabricators," or flaking tools, and its use is presumed to have been that of a tool employed in the fabrication of arrow-heads and other implements of flint.

Fig. 283.—Implement of Flint from Chambered Cairn at Unstan, Orkney (actual size).

Taking this Orkney group of chambered cairns as a whole, we find it presenting the same essential characteristics as are exhibited by the groups which have been described on the mainland of Scotland. There is considerable variation in the arrangement of the chambers, and a strongly marked tendency to a grouping of smaller cells round the main chamber, which may be regarded as a local characteristic peculiar to the Orkney Islands. But with this local peculiarity there are associated instances of the tripartite chamber so characteristic of the northern mainland area, and in several cases the still more characteristic features of the bounding wall and curved extremities are presented.

Comparing the general features of all the groups we have

now examined, we find that while the typical relationship is abundantly obvious, there is also obvious a strong local differentiation in each of the groups, which imparts to it a special character of its own. But the general features of the burial deposits are essentially the same in all the groups. The deposition of many successive interments in one chamber, the commixture of the bones of animals,—the ox, sheep, deer, and dog, the horse and swine,—with those of the human beings, the presence of burnt and unburnt interments in the same chamber, the general prevalence of the round-bottomed form of urn, and the total absence of instruments of metal from the groups of grave-goods deposited with the dead, are features common to them all, irrespective of the external form of the cairn in which the chamber is contained.

Another group of cairn structures of very remarkable character is situated in the little plain of Clava, in Strathnairn, within a few miles of Inverness. It seems to have consisted originally of seven or eight cairns, but of these only two are now sufficiently entire to show the details of their structure. The eastmost cairn of the group (Fig. 284) was opened by Miss Campbell of Kilravock many years ago. It is approximately circular on the ground-plan, and measures about 50 feet in diameter, and 10 feet high. Its basal outline is defined by a circle of large blocks laid close together. The opening of the passage is towards the west side of the cairn. The passage, which is about 18 feet in length and 2 feet wide, gives access to a circular chamber about 13 feet in diameter. The interior walls of the chamber are built of large blocks at the base, and smaller stones higher up. The roofs of both chamber and passage are gone, but the walls of the chamber exhibit the signs of convergence common to all structures of the kind. When the chamber was cleared out by Miss Campbell, the floor was found to be composed of a thick layer of earthy clay, in

which were burnt bones and the fragments of urns.[1] Judging from the description of these urns, they seem to have

Fig. 284.—View of Chambered Cairn at Clava, Strathnairn, with its surrounding Stone Circle.
(From a Drawing by Rev. Dr. J. Joass.)

differed from those found in the chambered cairns of Caithness and Argyll. They are of larger size, thicker, and more rudely made, of coarser paste, and less carefully fired. In form and character they closely resemble the cinerary urns found in the circles and cemeteries of the Bronze Age, as described in the previous Lectures. And, in point of fact, this cairn stands within a stone circle, of which seven stones still remain in position.

The same peculiarity of a circle of erect stones, placed at some distance from each other, and from the external outline of the base of the cairn, is also recorded in connection with other examples in the Clava group. In the general description of them by the Messrs. Anderson of Inverness, written when they were not so dilapidated as they now are, it is stated that they have each a ring of large stones hemming in and supporting their bases; while

[1] Two of these vessels were partially reconstructed, and have been engraved by Sir Thomas Dick Lauder in his book on *The Moray Floods*.

another circle of large masses of sandstone, ten or twelve stones in each circle, at the distance of several paces from the inner structure, is attached to each cairn.[1]

In the Clava group of chambered cairns we have therefore another local differentiation of the general type. Like all the others, they possess a definite external outline and a regularly constructed interior chamber and passage, but, unlike any of the others, there is no subdivision of the internal chamber, and they present an external feature which is not present among the groups of similar structures peculiar to Orkney, Caithness, and Argyll, viz., the addition of a ring of standing stones erected outside the periphery of the cairn. We have thus again reached a point in the investigation at which we find the stone circle and the chambered cairn united as a composite structure. But here the ring of standing stones is obviously an adjunct to the cairn which contains the burials within its chamber. In other words, it is the chamber which is the central idea and the essential object of the composite construction. I have already shown that when the stone circle appears alone, its included burials are characterised by their association with implements of bronze, while, on the other hand, the chambered cairns, whether possessing or not possessing an encircling stone-setting, have yielded only weapons and implements of stone. Thus, by the testimony of their included relics, which is the only evidence relevant to the determination of the sequence of the burials, it is established that the circles are the successors and not the predecessors of the chambered cairns, and therefore the composite structures which have the circle for an adjunct to the cairn must take their place in the series between the unencircled cairns and the un-

[1] Accurate ground-plans of these cairns have now been published in a very interesting paper on the Stone Circles of Strathnairn by Mr. J. Fraser, C.E., Inverness, in *Proc. Soc. Antiq. Scot.*, vol. xviii. p. 328.

cairned circles. The former precede the Bronze Age, the latter belong to it.

Reviewing the whole of the special features and characteristics which have now been detailed in connection with these chambered cairns, in this and the preceding Lecture, it is clear that, however much they may differ from each other in the minor details of external form, or internal arrangement they are nevertheless of one structural type, distinguished by two essential characteristics:—(1) by the presence of an internal chamber accessible by a passage; and (2) by the existence of a definite external outline on the ground-plan, structurally defined by a single, or more usually by a double, retaining wall. When we call them "cairns" we merely describe their actual aspect at the present day, as the greatly dilapidated ruins of constructions that were essentially structural in conception and character. The system of their design was a system which produced a building with an outside and an inside, a floor and a roof, external and internal doorways, partitions, and passages. The system of burial for which they were constructed was a system by which the dead were usually provided with grave-goods corresponding to their station or condition in life, and from this it resulted not only that the furnishings of the houses of the dead bore some resemblance to those of the dwellings of the living, but also that these sepulchral constructions were necessarily more or less of the nature of chambers to be thus furnished. Their contents disclose to a certain extent the life and culture of the people. They possessed the same domestic animals we still possess, and kept dogs and hunted the red-deer. Their common weapons were bows with flint-pointed arrows, and battle-axes of polished stone. They made pottery of a dark coloured, thin, and hard-baked paste. The vessels, though not thrown on the wheel, were finely shaped, wide-mouthed,

round-bottomed, and thick-lipped, the lip often bevelled outwardly and recurving over the vertical rim, which was usually highly ornamented. Their system of ornament was simple, consisting of shallow flutings, or scorings in straight lines arranged in groups contrasting as to their direction, or markings with the finger-nail.

It is difficult indeed, from data so obviously defective, and records of observations so manifestly incomplete, to form any adequate conception of the conditions of the life and the relative quality of the culture thus dimly disclosed. But it is easy to evade the difficulty of dealing scientifically with conditions of human existence which are wholly unfamiliar to our experience, by characterising them as brutish and barbarous, uncultured and uncivilised; and this has always been the attitude of the more highly cultured towards the less highly cultured races, whether of ancient or of modern times. The full significance of all the indications of the nature of that life and the quality of that culture with which we have now been dealing, will not be completely disclosed (so far as it is at present apprehensible) until we have examined the varied series of the relics of its industrial arts that have been found unassociated with burials—and these will form the subject of the next and concluding Lecture. But with regard to these chambered sepulchres, while it is clear that a just conception of their character and significance is only to be obtained by a long-sustained series of laborious and systematic investigations, it is equally apparent that the enormous magnitude of these peculiar structures is fitted to convey an instantaneous impression of energy and power, while the intention, so obvious in their construction as "the houses of the dead," instinctively challenges our respect for their builders.

LECTURE VI.

IMPLEMENTS AND WEAPONS OF THE STONE AGE.

In the two previous Lectures I have dealt with the sepulchral structures of the Age of Stone in Scotland. As I have before had occasion to remark of the Age of Bronze, I have now to repeat with respect to the Age of Stone, that there is no vestige of a dwelling or a defensive construction known in Scotland which can be proved by evidence to have been the work of the men of the Stone Period. The remaining materials from which conclusions may be drawn with regard to the culture and civilisation of that period consist of the arms, implements, and ornaments of the people, which have been recovered from the soil, though not associated with the burial of the dead. It has already been shown by the examination of the circumstances of the occurrence of the industrial products of the Age of Bronze, that the number of these products which have been found in association with burials is small in comparison with the number that have been discovered having no connection with sepulture. But it is perhaps more strikingly true of the industrial products of the Age of Stone, that it is only in very few and rarely occurring instances that they have been found associated with burials in Scotland. By far the larger number have been found casually, in ploughing, in

draining or other excavations, in peat mosses, in the beds of rivers and the margins of lochs, or in sandy wastes by the sea-shore, where the blowing of the sand lays bare at times, in a settled stratum on the harder subsoil, an accumulation of all the objects that have been dropped upon its surface in all the ages during which it has been traversed by man.

But it by no means follows that all the stone implements and weapons which are thus casually found in the soil are assignable to the Age of Stone. We have already seen that certain types of stone implements and weapons are found in Bronze Age graves, thus indicating the survival of these varieties into the Age of Bronze, while there are other types which we know from similar evidences of association to be even assignable to the Age of Iron. In fact it is difficult, if it be not impossible, in the present state of our knowledge, to point to a single form of stone implement or weapon commonly found in Scotland, which can be proved by evidence to be exclusively a Stone Age type. We have seen that there is a Stone Age type of sepulchral cairn, and a Stone Age type of sepulchral urn, which have not been found in any one instance associated with the use of Bronze; but the case is altogether different with the types of weapons and implements of stone, which, though they may have originated in the Age of Stone, appear to have continued in use after the introduction of bronze, and probably till similar tools and weapons of metal became abundantly and readily obtainable.

In dealing with the aggregate collection of stone implements and weapons that have been casually found in the soil of Scotland, the most obvious fact that presents itself to the observer is that they separate themselves into groups or classes distinguishable from each other by certain characteristics of form which obviously have relation to the several purposes for which the units of each group were respectively

designed. Examining the several groups or classes with relation to their purposes, we classify them according to their obvious uses as axes, spear and arrow heads, knives, saws, borers, and scrapers.

The axes are of two varieties, perforate and imperforate. The group of perforated axes is much less numerous than those that are unperforated. They are characterised by a greater variety of form, and are frequently ornamented, while the others are always plain. They are very rarely made of flint, but often of granite, gneiss, diorite, porphyry, basalt, and indurated sandstone. They vary greatly in size; and, while they are all characterised by the presence of the shaft-hole, they are divisible into three varieties, viz. (1) having an edge at both ends; (2) having an edge at one end only; (3) having both ends blunt or rounded.

The variety of perforated stone axe having an edge at both ends is the rarest of the three typical forms. An example has already been instanced as having been found in a Bronze Age grave in the stone circle at Crichie.[1] It is therefore a form which survived into the Bronze Age. Another one, of the same form as that found at Crichie, was found in a barrow at Whitehall, in the island of Stronsay, Orkney. It differs from the Crichie specimen in being unornamented, but as it presents the peculiarity of being unfinished, in so far as the perforation for the handle has not been made, it may not have been intended to be destitute of ornament in its finished condition. A third axe-head of this form (Fig. 185), also in process of manufacture, being still unperforated, and only roughly blocked to shape, was found in the island of Coll. It is somewhat larger in size, being 4½ inches in length. In its unfinished condition its ends are so rounded that there is no indication of an intention to bring either of them to an edge. But it must be borne

[1] See Fig. 123, at p. 106.

in mind that these stone battle-axes were not meant to cut. Their edges are never sharp, and they are thus distinctly

Fig. 285.—Stone Axe or Hammer found in Coll (4½ inches in length).

separated by this special characteristic, as well as by their finer features of form and ornamentation, from the imperforate axes that were used as tools. In the cases which have been described, the edges of the weapon lie in the direction of the shaft-hole, but there are also examples in which the direction of the edges is at right angles to the shaft-hole. A small axe of this description, found in a barrow in Shetland (Fig. 286), is of a finely mottled gneissose stone, beautifully polished, and having the shaft-hole drilled through with parallel sides. It measures 4 inches in length by 1½ inch in width, and in the cross-section is a slightly flattened oval. Another of the same form, from Scarpiegarth, also in Shetland, measures 4¼ inches in length, and 2 inches in greatest width, having

a shaft-hole $\frac{7}{8}$ inch in diameter, the sides of which are quite parallel.

A finely made specimen, from Portpatrick in Wigtownshire (Fig. 287), which has the edges in the same direction as the shaft-hole, is oval in shape, tapering to both ends, the flat faces slightly hollowed towards the centre, and the perforation for the handle nearly in the middle of its length. It measures $4\frac{3}{4}$ inches in length, $2\frac{1}{4}$ inches in greatest breadth, and $1\frac{1}{4}$ inch in thickness at the shaft-hole, which is $1\frac{1}{8}$ inch wide, narrowing to $\frac{7}{8}$ inch in the middle, as shown in the section.

Fig. 286.—Stone Axe found in a Barrow in Shetland (4 inches in length).

The second variety, which has the edge only at one end of the weapon, is much more common. A fine example (Fig. 288), found at Chapelton, near Ardrossan, Ayrshire, is of granite, $4\frac{1}{2}$ inches in length, and $2\frac{1}{2}$ inches in greatest width. It narrows to $1\frac{1}{2}$ inch at the shaft-hole, which is 1 inch in diameter, and has been bored from both sides, as is apparent from the fact that the borings have not met accurately in the middle of thickness of the weapon. An ornamental band of three incised lines borders the concave edges pierced by the shaft-hole, and the shorter end of

Fig. 287.—Stone Axe found near Portpatrick, Wigtownshire ($4\frac{3}{4}$ inches in length).

the instrument is finished like a hammer with a rounded face ¾ inch in diameter. This axe-head was found with a cremated interment enclosed in an urn, which was turned up by the plough. Another axe-head, of greenstone (Fig. 289), nearly similar in form, but slightly larger, was

Fig. 288.—Stone Axe found at Chapelton, Ayrshire (4½ inches in length).

also turned up by the plough at Montfode, near Ardrossan. It measures 5 inches in length by 3 inches in greatest width, having a shaft-hole 1 inch in diameter. It is ornamented by a border of two incised lines round the concave edges pierced by the shaft-hole, and has a slightly projecting knob

in the centre of the convexity of either side. A larger specimen (Fig. 290), still of the same form, but without the incised ornamentation, was found at Claycrop, in the parish of Kirkinner, Wigtownshire. It measures 6½ inches in length

Fig. 289.—Stone Axe found at Montfode, Ayrshire (5 inches in length).

by 3½ inches in greatest width and 2¾ inches in greatest thickness. As in the previous examples, the sides are considerably hollowed to shorten the bore for the shaft-hole. The perforation, which is 1¼ inch in diameter, is thus only

2 inches in length. It has been bored as usual from both sides, and, as seen in the section, the borings diminish in width toward their junction, which is not central. A variety of

Fig. 290.—Stone Axe found at Claycrop, Wigtownshire (6½ inches in length).

this form, which is more wedge-shaped and less distinctly hammer-like at the blunt end, is represented by an example in granite (Fig. 291), 5½ inches in length, by 2 inches in greatest width, which was dredged up from the bed of the

river Tay at Ballinbriech, near Newburgh. The perforation for the shaft is 1 inch in diameter at the external openings,

Fig. 291.—Stone Axe found in the Tay, near Newburgh (5½ inches in length).

and the borings from both sides have met pretty fairly near the centre of the thickness of the implement. Another variety, presenting almost the same side view as the Ballin-

briech specimen, but more rounded in the butt, is represented by an example (Fig. 292) from Fardenreoch, in the parish of Colmonell, Ayrshire. It is almost the same size, 5¼ inches in length, and 2½ inches across the cutting face, but the woodcut is drawn to a smaller scale. The shaft-hole is

Fig. 292.—Stone Axe found at Fardenreoch, Ayrshire (5¼ inches in length).

1 inch in width at the external openings, narrowing slightly in the middle, as shown in the section. The material is diabase, with a mixture of pyrites of iron. It is supposed to have been washed out of a cairn of stones in which an unburnt burial was subsequently found.[1] A still rarer form is

[1] "Stone Implements of Ayrshire," by Dr. James Macdonald, in the

modelled almost on the lines of a modern hammer. An example of this form in whinstone (Fig. 293), which possesses

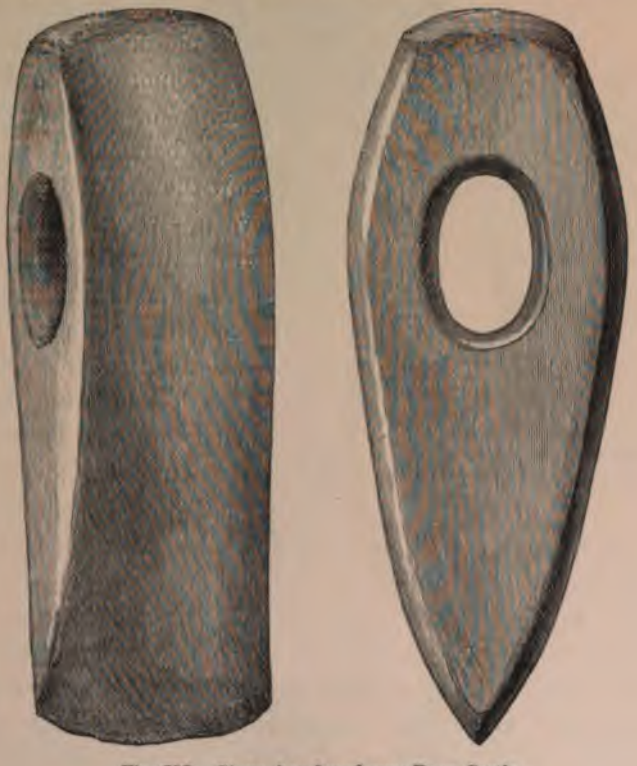


Fig. 293.—Stone Axe found near Duns Castle (8 inches in length).

the peculiarity of an oval shaft-hole, was found in trenching ground in the neighbourhood of Duns Castle. It measures 8 inches in length and 2½ inches in greatest thickness. An equally finely made implement (Fig. 294), dredged from the Tay, near Mugdrum Island, is less distinctly hammer-like at the butt-end, and has the usual circular shaft-hole. It is of a dark-coloured whinstone, 6¼ inches in length, by

Collections of the Ayr and Wigtownshire Archæological Association, vol. iii. p. 78.

2 inches wide, and 1½ inch thick, the perforation for the handle being 1 inch in diameter.

Fig. 294.—Stone Axe found in the Tay, near Newburgh (6¼ inches in length).

A specimen of much larger size (Fig. 295), found in the Loch of Friars Carse, Dumfriesshire, is a typical example of a variety of stone axe or hammer — wedge-shaped below the shaft-hole, truncated above it,—very common in the southern districts of the country. Indeed, one of the special points of interest connected with it is the suggestion, derived from a comparison of the localities in which the specimens occur, that the form may be a southern one. But until we have succeeded in obtaining an exhaustive collection for the whole of Scotland, any attempt to define the geographical areas of the several forms is futile. We know at present that there are many specimens from that part of Scotland lying south of the Tay, and most of these from the region south of the Forth, but we do not know what would be the predominant form among an equal number of specimens of perforated axes from the region north of the Tay, because there is no fairly representative collection of them. Many of these southern specimens are of great size, usually from 7½ to 10 or 11 inches in length, and of proportionate width and thickness. They are so heavy that they could only have been wielded with difficulty as weapons. Though some of them, like the example (Fig. 296) found at Prieston, in the parish of Colmonell, Ayrshire,[1] exhibit a kind of ornamen-

[1] *Collections of Ayr and Wigtownshire Archæological Association*, vol. ii. p. 4.

Fig. 295.—Stone Axe found in the Loch of Friars Carse (10 inches in length).

Fig. 296.—Stone Axe found at Prieston, Ayrshire (10½ inches in length).

tation, their general rudeness, and the want of symmetry by which they are sometimes characterised, indicate rather a utilitarian purpose than a warlike character. Their common form is exhibited in that of the example from Torhouskie, in the parish of Wigtown (Fig. 297), which is here engraved to a smaller scale than several of the previous examples. It measures $9\frac{1}{2}$ inches in length, 4 inches in width at the widest part, and $2\frac{1}{2}$ inches in thickness. The material is a

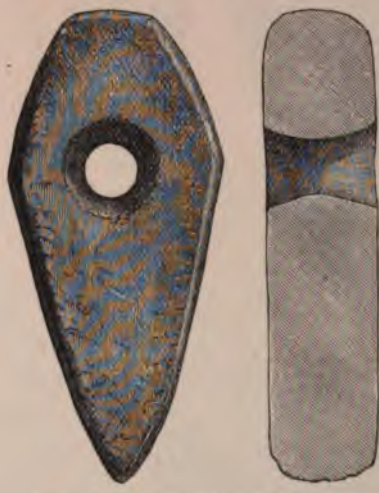


Fig. 297.—Stone Axe found at Torhouskie ($9\frac{1}{2}$ inches in length).

Fig. 298.—Stone Axe from Machermore ($6\frac{1}{2}$ inches in length).

greyish close-grained sandstone. Another example (Fig. 298), from Machermore, Old Luce, Wigtownshire, exhibits the want of symmetry in form which sometimes characterises this variety of implement. It is of reddish-grey sandstone, $6\frac{1}{2}$ inches in length, $3\frac{5}{8}$ inches wide in the widest part, and $3\frac{1}{4}$ inches in thickness,—the thickness, as in most of these implements, being the same throughout. The shaft-hole is larger than usual, being 2 inches in diameter externally, but narrowing to $1\frac{5}{8}$ inch at the middle, having been bored

as usual from the two opposite sides of the implement. A still ruder though more symmetrical example (Fig. 299) comes from Portpatrick, also in Wigtownshire. It is a flattish, oval, and water-rolled stone of greyish greenstone, with scarcely any sign of artificial shaping. It measures $6\frac{3}{4}$ inches in length, $3\frac{3}{4}$ inches in breadth, and 3 inches in thickness. The perforation for the handle is 2 inches diameter at the surface, but narrowing in the middle of the thickness of the implement to $1\frac{1}{4}$ inch diameter. One somewhat triangular in shape (Fig. 300), from Kirkcowan, in Wigtownshire, is

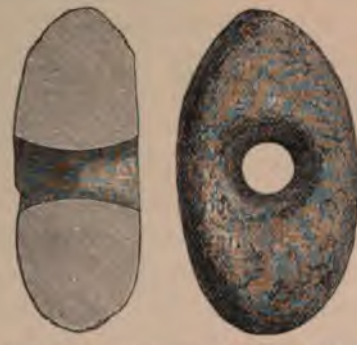


Fig. 299.—Stone Axe found near Portpatrick ($6\frac{3}{4}$ inches in length).

Fig. 300.—Stone Axe from Kirkcowan ($3\frac{1}{2}$ inches in length).

Fig. 301.—Stone Axe from Balmaclellan ($3\frac{1}{2}$ inches in length).

$3\frac{1}{2}$ inches in length by $3\frac{1}{4}$ inches in greatest breadth, and $1\frac{1}{4}$ inch in thickness; the thickness being nearly equal throughout. The shaft-hole, which is nearly in the centre

of the implement, is $1\frac{1}{4}$ inch diameter at the surface, narrowing to $\frac{3}{4}$ inch at the centre. One more distinctly triangular in shape, from Balmaclellan (Fig. 301), has the shaft-hole in the centre. It measures $3\frac{3}{4}$ inches of a side, and $1\frac{1}{2}$ inch in thickness, the shaft-hole being $1\frac{3}{4}$ inch diameter at the surface, and narrowing to 1 inch at the centre.

The third variety of these perforated implements, hammer-shaped at both ends, is simply a war-hammer. A specimen of granite, narrower at one end than the other, has already been described as found in the chamber of the horned cairn at Ormiegill, Ulbster.[1] One somewhat larger, and with both ends equal (Fig. 302), was found with a cremated burial,

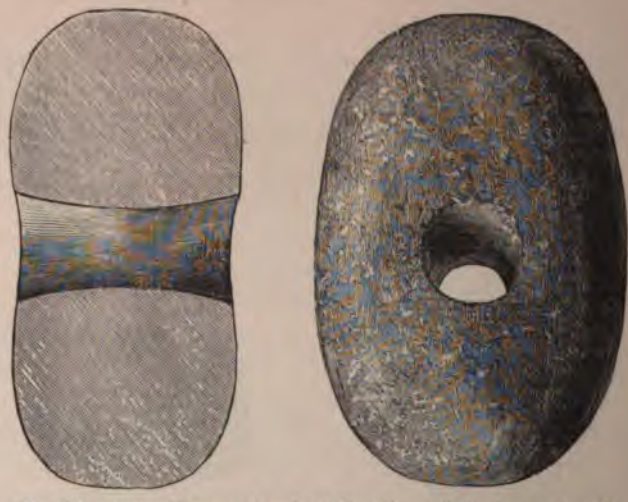


Fig. 302.—Stone Hammer found at Cleughhead ($3\frac{3}{4}$ inches in length).

enclosed in a cist, on the farm of Cleughhead, Glenbervie, in Kincardineshire. It is also of a granitic stone, $3\frac{3}{4}$ inches in length, $2\frac{1}{2}$ inches in width, and $1\frac{3}{4}$ inch in thickness. The form is a flattened oval, narrowing slightly in the middle so

[1] See the description and figure at p. 246.

as to diminish the space to be perforated. The perforation for the shaft-hole is $\frac{3}{4}$ inch in diameter, and of nearly equal width throughout. A very fine example of this variety (Fig. 303), though of a different shape, comes from Urquhart,

Fig. 303.—Stone Hammer found in Urquhart, Elginshire (actual size).

in Elginshire. It is of whitish flint, finely polished, and has been intended to be finished in a highly ornamental manner, by working a lozenge-shaped pattern in regularly formed and contiguous facets, all over the surface. The pattern has been finished over the small end of the hammer, and blocked in down the sides, but the work had not proceeded further. Its appearance when finished is shown by another hammer (Fig. 304), of precisely the same form and material, ornamented with the same pattern, which was found at Maysmore, near Corwen, in North Wales, and is now in the National Museum.[1] It is truly a beautiful piece of work,

[1] This beautiful specimen was presented by Rev. Edward Lowry Barnwell, Melksham, Wilts, F.S.A. Scot.

executed with infinite labour and surprising skill. The design of the ornament is peculiar, and admirably carried

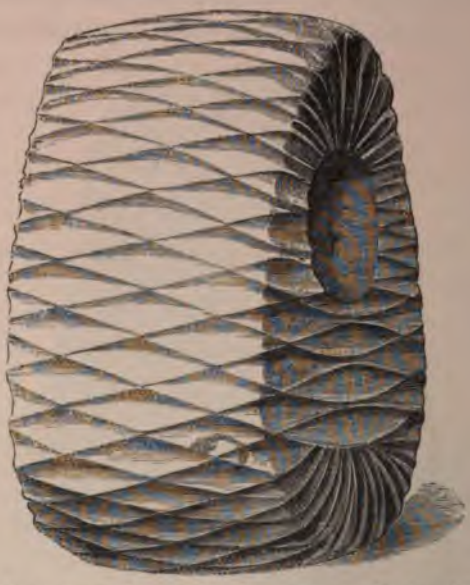


Fig. 304.—Stone Hammer found near Corwen, Merionethshire (actual size).

out, and the labour implied in its execution by mere dexterity of handicraft is wellnigh incredible. There are upon its surface upwards of two hundred separate spaces, each hollowed out to a uniform depth in the centre, and rising towards the edges so regularly as to preserve the lines of direction of the ridges with perfect accuracy and precision. The stone is so hard that steel will not scratch it, and yet the finish of all the details of the ornament and the polish of their surface are perfect. Looking at the symmetry and beauty of its form, the design of its ornament, and the perfection of its finish, in the light of the fact that the processes by which these results have been obtained (without the aid of machinery) are matters of speculation and controversy

among the experts of the present day, it is impossible to doubt that a work like this—irrespective of the time and manner of its production, and apart from all questions of the capacity and culture of its producer—must of necessity take its place among the products of skill and taste.

In dealing with the imperforate axes of stone, I shall notice first a few instances in which they have been found in groups of greater or less number, in actual association with each other or with articles of a different character.

At Campbeltown, in Argyllshire, at some time previous to 1864, a group of two stone axes (Figs. 305, 306) was found

Figs. 305, 306.—Stone Axes found at Campbeltown (7 inches and 5½ inches in length).

associated with two stone moulds for casting spear-heads of bronze.[1] The axe-heads are finely made, and carefully finished, of a dark close-grained clay ironstone. They are similar in form, oval in section in the middle of their length,

[1] See the description of the moulds in Lecture III., p. 186, and *Proc. Soc. Antiq. Scot.*, vol. vi. p. 48.

sharpened to a rounded cutting edge, and tapering to a bluntly rounded or truncated butt. They differ in size, the larger of the two being 7 inches in length, by 3 inches across the cutting face, and the smaller $5\frac{1}{2}$ by $2\frac{1}{2}$ inches. The circumstances of their association show that they belonged to a time when the most advanced forms of the Bronze Age had come into use, though the forms of the Stone Age had not been entirely disused.

A group of two stone axes (one of which is shown in Fig. 307) was found together in Aberdeenshire,[1] the locality and the date being unfortunately unknown. They are finely-finished implements, made of a hard close-grained felstone. They are nearly of the same form as the two that have been previously described, but instead of being truncated at the butt, they taper to a point. They are remarkable for their close similarity to each other in every respect, there being no two stone implements known which are more nearly identical in material and size, in form and finish.

Fig. 307.—Stone Axe, one of a pair, found in Aberdeenshire (9 inches in length).

At Drumour, on a spur of Mount Blair, in Glenshee, Forfarshire, a group of two stone axes was found in 1870, in a mossy hollow, at a depth of about five feet under the surface. They are of large size, the larger of the two being $15\frac{1}{2}$ inches in length, by $3\frac{3}{4}$ inches across the cutting face, and the smaller (Fig. 308) measuring 13 by 3 inches. It shows the peculiarity of a slight expansion at the sides of the butt, doubtless intended for ornament. The material of both is

[1] *Proc. Soc. Antiq. Scot.*, vol. xii. p. 207.

a hard close-grained claystone, and the surface is carefully smoothed. They differ in form from those last described, inasmuch as they do not taper conically to the butt, and the edges are ground flat longitudinally, so that the cross-section in the middle of their length is a pointed oval with its pointed ends taken squarely off. They taper somewhat towards the butt, and the butt end is of the same form as the cutting end, though not sharpened to a cutting edge.

Fig. 308.—Stone Axe found at Drumour (13 inches in length).

In the parish of Daviot, Inverness-shire, sometime before 1865, a group of three stone axes was found, with an oblong pestle-shaped implement, in a cairn of stones. There is no evidence that these implements, though found in a cairn, were in any way associated with traces of burial. This may of course be due to the imperfection of the record, but we are not entitled to assume an association with burial in the absence of positive evidence, and in face of the fact that at the present moment there is no well-authenticated instance of a stone axe of this type having been found with a burial in Scotland. The two largest of these axes were placed in the National Museum, with the pestle-shaped implement.[1] The larger of the two (Fig. 309) is 12½ inches in length, and 4 inches across the cutting edge. It tapers slightly to the butt, which is of the same form as the cutting edge, and

[1] The third axe may be one in the collection of Mr. John Evans, which came from Daviot.—*Ancient Stone Implements of Great Britain*, pp. 121, 135.

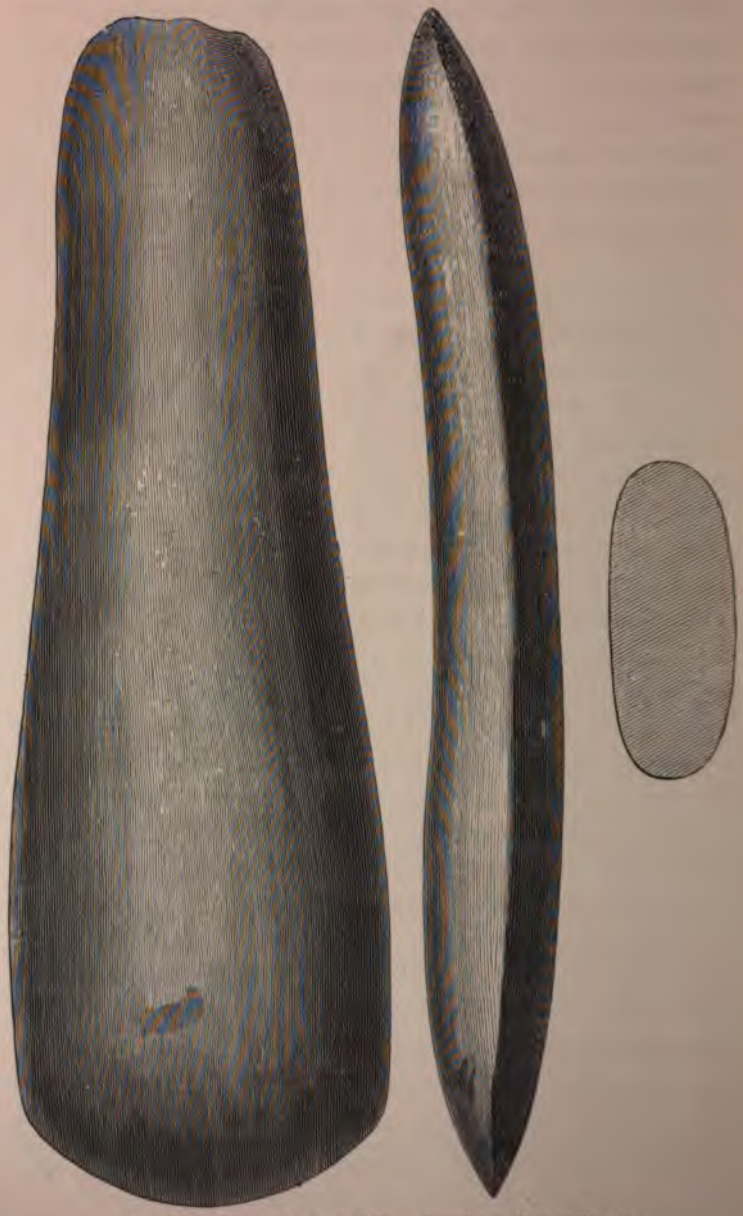


Fig. 309.—Stone Axe, one of three found together at Daviot, Inverness-shire (12½ inches in length).

almost equally sharp, the section across the middle of the implement being an elongated oval. The smaller of the two axes measures $9\frac{1}{2}$ inches in length, and $2\frac{1}{2}$ inches across the cutting edge, is oval in the cross-section in the middle of its length, and tapers to a conically pointed butt.

At Tingwall in Shetland a group of three stone axes of dark porphyritic stone were recently discovered lying together in the soil. The smallest of the three (Fig. 310), which is

Fig. 310.—Stone Axe, one of three found together at Tingwall, Shetland ($6\frac{1}{2}$ inches in length).

flatter on one side than the other, and curved longitudinally so as to be somewhat adze-shaped, measures $6\frac{1}{2}$ inches in length, by 2 inches in breadth, tapering to about $1\frac{3}{4}$ inch at the butt, which is bluntly rounded. The second (Fig. 311) is 9 inches in length, by $3\frac{3}{4}$ inches across the slightly ex-

panded cutting face, oval in the cross-section, and tapering gradually to a conically pointed butt. The third (Fig. 312), which is the largest, is $10\frac{1}{2}$ inches in length, by $2\frac{3}{4}$ inches

Fig. 311.—Stone Axe, one of three found together at Tingwall, Shetland (9 inches in length).

across the cutting face, oval in the cross-section in the middle of its length, and tapering gradually to a roundly pointed butt.

A group of two very beautifully made and finely polished axes of grey flint (Figs. 313, 314) was found in digging a

Fig. 312.--Stone Axe, one of three found together at Tingwall, Shetland (10½ inches in length).

drain near Fochabers. They are similar in form, sharp at both ends, and as finely finished and highly polished as if

they had been the work of a modern lapidary, with all the appliances which science has placed at his command. It is

Fig. 313.—Finely polished Axe of White Flint, found near Fochabers (7¼ inches in length).

a noticeable characteristic of the more finely finished and highly polished axes that they rarely show any traces of the wear and tear of common use. Many of the less carefully finished implements appear to have been frequently re-sharpened; the edge is often worn in an oblique direction to the axis of the implement, as it would be by long-continued use. But the finer specimens, for the most part, appear as if they were newly from the maker's hands after he had given

them their final polish, and was satisfied that he could do nothing more to improve their appearance. It seems to be

Fig. 314.—Finely polished Axe of White Flint, found near Fochabers (10 inches in length).

a reasonable deduction from this constancy of the perfection of form and finish in these finer pieces of Stone Age handi-

craft, that they were not tools, but weapons, exempted, on account of their superior excellence of material and workmanship, from the more common uses, and the tear and wear of ordinary employment.

From a comparison of the forms presented by the members of these groups, it appears that the imperforate stone axe possesses a form which is peculiar to itself. It is unlike the forms of the bronze axes that succeeded it, as these are unlike the iron axes that succeeded them. But if it be true of the typical forms of the axes in bronze and iron, that they are forms which are specially suited to the properties of the materials of which they are made, and to the purposes of the implement, it is none the less true of the Stone Age implement, that its peculiar specialty of form has also been given to it in view of the peculiar properties of the material of which it is made. It is the form which of all others is most obviously suited to the properties of the material and the purposes of the implement. The variations in outline, size, material, and finish, are considerable, but the suitability of the form of the implement to its purpose, in view of the properties of the material, is always apparent.

This will perhaps be more clearly exhibited if, in our examination of the aggregate collection of these implements, we commence with the ruder examples, and proceed from them to those that are more finely finished. The materials of which they are made are flint, quartzite, porphyry, felstone, serpentine, diorite, and various kinds of granitic and metamorphic rocks, indurated sandstones, and clay slate.

Taking first those that are made of flint, which are necessarily rare in Scotland, we find them presenting various degrees of finish, from the roughly chipped specimens with only a slight grinding at the edge, up to the completely polished examples. One, of greyish flint (Fig. 315), found at Newton of Affleck, in the parish of Monikie, Forfarshire,

which is also remarkable as being among the smallest specimens on record, presents this roughly chipped character, the grinding being confined to the lower part of the cutting edge only. It measures $1\frac{5}{8}$ inch in length, by 1 inch in width across the cutting face, and tapers to a truncated butt. In a larger example, of yellowish flint (Fig. 316), found at Meft, in the parish of Urquhart, Elginshire, the grinding extends over nearly the whole surface, but has not been continued so as to obliterate the hollows produced in the process of chipping, except on the part nearest the edge. It measures 3 inches in length, by $1\frac{3}{4}$ inch in width across the cutting face, and has slightly rounded sides, and a truncated butt. A long chisel-like axe of dark-coloured flint (Fig. 317), from the parish of Fordoun, Kincardineshire, shows the chipping over its whole surface, except the part immediately above the cutting edge. It has been chipped from both sides so as to leave a ridge running up the centre, thus giving the cross-section in the middle of its length an irregularly lozenge-shaped outline. The butt is not truncated, but tapered to a point, and the edge is more flattened on one

Fig. 315.—Axe of Flint found at Newton of Affleck ($1\frac{5}{8}$ inch in length).

Fig. 316.
Axe of Flint from Urquhart, Elginshire (2 inches in length).

side than on the other. It measures 8 inches in length, by $1\frac{3}{4}$ inch across the cutting face. A finely made example, of a bright yellowish flint, found near Dundee (Fig. 318), has

Fig. 317.—Axe of Flint found at Fordoun, Kincardineshire (8 inches in length).

Fig. 318.—Axe of Flint found near Dundee ($5\frac{7}{8}$ inches in length).

the edges nearly straight, with a very slight taper to the butt, which is of the same form as the cutting edge. Although the grinding does not extend much above the edge, the outlines of the implement, formed by chipping alone, are singularly straight and regular. It is thinner, in proportion to its width, than any of those that have been described, for though it measures $5\frac{7}{8}$ inches in length, by $2\frac{1}{4}$ inches in breadth, it nowhere exceeds $\frac{3}{4}$ inch in thickness.[1]

[1] This example, along with Figs. 55, 58, 315, 353, and the large arrow-head figured on the Title-page, are in the collection of Mr. John Sturrock, F.S.A. Scot.

A beautifully formed and perfectly polished axe of yellow flint (Fig. 319), remarkable for its length and slenderness, found many years ago in Buchan, Aberdeenshire, was long in the possession of a working shoemaker in Old Deer, who delighted in showing it to his friends and customers. Unfortunately it slipped from the fingers of one who was examining it, and received irretrievable damage by falling on the shoemaker's lapstone. Mutilated as it is, however, it is still a most remarkable example of the marvellous handicraft of the ancient makers of stone tools and weapons. When perfect it would have compared favourably with any specimen of lapidary work, ancient or modern. It is still 8 inches in length, wanting a portion of the butt, and a larger portion at the cutting edge. It is slightly lozenge-shaped in section in the middle of its length, decreasing in thickness towards both ends. Its width at the broken part of the lower end is 1½ inch, and at the butt ⅝ inch, nowhere exceeding ½ inch in thickness.

Fig. 319.—Chisel-like Axe of Flint, Old Deer (8 inches in length).

One of the most beautifully finished specimens of polished flint (Fig. 320), closely resembling those found at Fochabers (as previously noticed), was ploughed up at Gilmerton in East Lothian, and presented to the Society's Museum in April 1782, where it has been preserved now

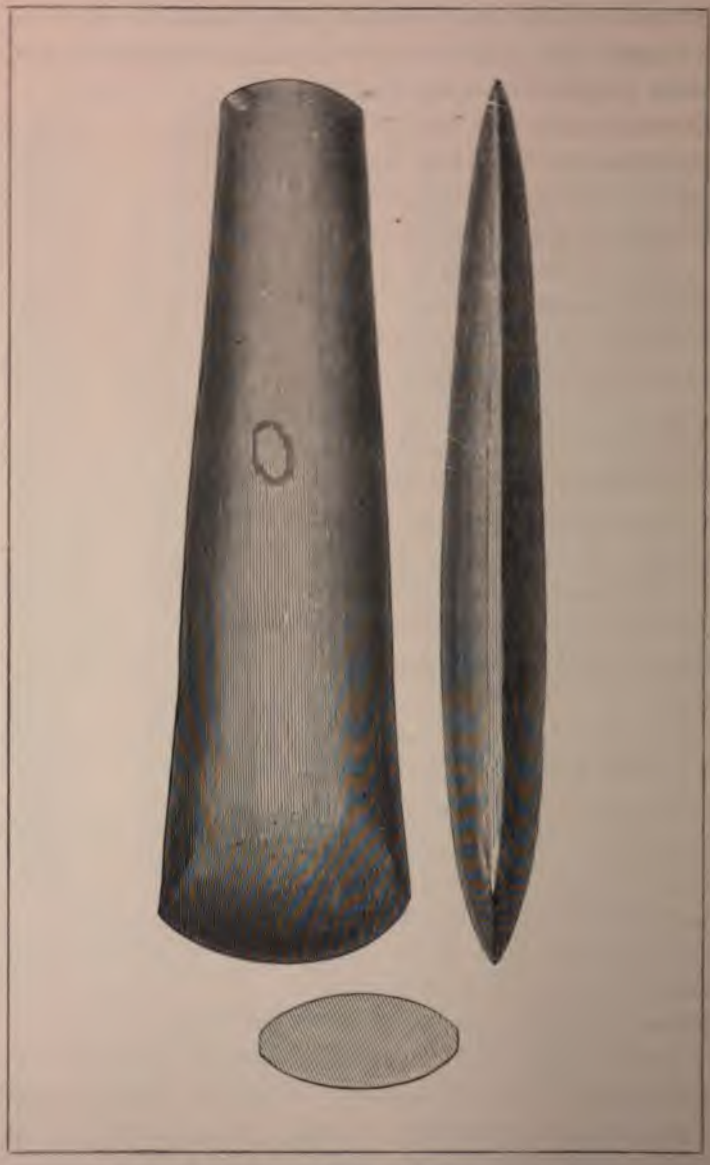


Fig. 320.—Polished Axe of Yellow Flint found at Gilmerton (9¼ inches in length).

upwards of a century. It is of a pale yellow flint, 9¼ inches in length, and 2⅝ inches in width across the cutting face, finely polished all over, the sides ground flat, and the edges slightly expanding at the ends, which are both equally sharp.

Fig. 321.—Polished Adze of Grey Flint found at Slains (6¾ inches in length).

An adze-head of flint (Fig. 321), smaller in size, but of almost equal fineness of finish, from Ferny Brae, in the parish of Slains, Aberdeenshire, presents a notable peculiarity of form, being almost flat on one side, and ridged on the back, the ends ground down from the ridge to a rounded cutting edge. It measures 6¾ inches in length and 2¼ inches in width across the cutting face at the wider end.

Turning now to the axes that are made of other materials than flint, we find that they are almost invariably smoothed or polished all over the surface. This difference of finish appears to be due simply to the difference in the nature of the material of which they are composed. On account of its conchoidal fracture, a nodule of flint is readily brought to the desired shape by chipping, although it is extremely difficult to grind and polish. But it is different with these other materials which do not possess the conchoidal fracture, and therefore cannot be so readily brought to shape by chipping, although, when they have been shaped, they may be ground or polished with comparative ease.

These polished axes made of other materials than flint vary greatly in size, from little more that 1½ inch to 15 inches in length. The smallest in the National Collection, a finely polished implement of greyish porphyry, from the parish of Urquhart, Elginshire, is 1⅝ inch in length by 1½ inch across the cutting face, and ⅝ inch wide at the butt, nowhere exceeding a thickness of ⅜ inch. It is of the same form as the specimen here figured from Dundee (Fig. 322), a well-made little axe, with flattened sides and butt, measuring 2⅝ inches in length, 2 inches across the cutting face, tapering to 1 inch at the butt, and nowhere exceeding ⅝ inch in thickness. A larger example, of reddish quartzite, with straighter sides and more rounded butt, found at Dalmeny, Midlothian (Fig. 323), is perfect in edge and outline, and carefully polished, except on the rounding of the butt, which still bears the marks of picking or dressing with a pointed tool. It measures 5¾ inches in length by 3 inches in breadth across the cutting face, and 1¼ inch in greatest thickness.

Fig. 322.
Stone Axe found at Dundee
(2⅝ inches in length).

A very pretty specimen, from Caithness, of a hard light-green stone, almost like jadeite, with a beautiful polish (Fig. 324), has a longish oval section in the middle of its length, tapering to a point at the butt. It measures 3¾ inches in length by 1½ inch across the cutting face. Another of the same form, but of much larger size (though here drawn to a smaller scale as Fig. 325), comes from Berwickshire. The material is a bluish stone resembling aphanite. It measures 10½ inches in length by 2¾ inches across the cutting face. Two specimens from Shetland, scarcely so graceful in outline,

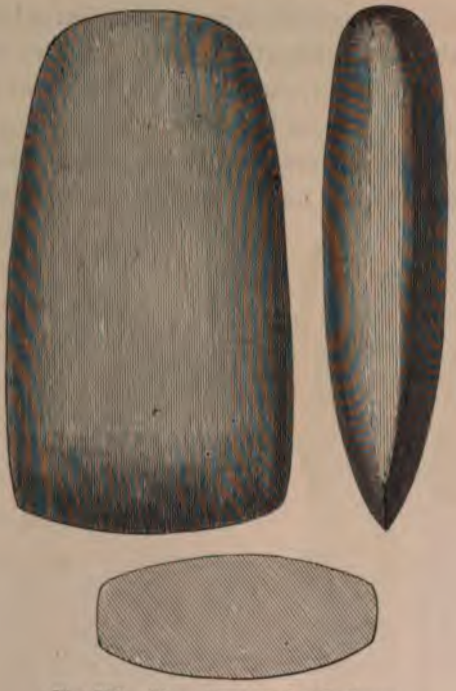


Fig. 323.—Stone Axe found at Dalmeny
(5¾ inches in length).

Fig. 324.—Stone Axe from Caithness
(3¾ inches in length).

Fig. 325.—Stone Axe from Berwickshire
(10½ inches in length).

exhibit modifications of this form. One (shown in Fig. 326) is of greyish porphyritic stone, 10 inches in length, and 3 inches across the centre where it is widest, oval in section, tapering both ways from the middle, upwards to a pointed butt, and downwards to an oval cutting edge. It was found under six feet of peat on the hill above Grimaster, called

Fig. 326.—Axe of Porphyrite found near Lerwick (10 inches in length).

Fig. 327.—Stone Axe found at Cunningsburgh, Shetland (10⅞ inches in length).

Mount Bran, about two miles from Lerwick. The other axe (Fig. 327), which comes from Cunningsburgh, is formed of a highly indurated shale, and is less regularly formed, slightly broken at the butt, and the cutting edge more rounded. It measures 10½ inches in length. Other two specimens from Shetland exhibit different varieties of form. One, of por-

phyritic stone (Fig. 328), is of a more cylindrical body, slightly oval in the cross-section in the middle of its length,

Fig. 328.—Axe of Porphyry from Shetland (11 inches in length).

Fig. 329.—Adze of Serpentine from Shetland (11½ inches in length).

tapering upwards to a bluntly pointed butt, and downwards to a more flattened cutting edge, which expands at both sides in a manner more frequently seen in implements of bronze than in those of stone. It measures 11 inches in length by 4¼ inches across the cutting face. The other specimen (Fig. 329), which is of a more slender form, has the peculiarity of being flatter on one side than on the other, so that it is more adze-shaped than axe-shaped. It differs also in being almost alike at both ends, but sharper at the

wide end. It measures 11½ inches in length, 2¾ inches wide at the broader end, 1⅝ inch at the other. A larger and more distinctly adze-shaped implement of indurated clay-

Fig. 330.—Adze of Claystone from Shetland (14 inches in length).

stone (Fig. 330), also from Shetland, is remarkable for its curvature in the direction of its length. In the cross-section it is a greatly compressed oval, but its most remarkable

peculiarity is that, instead of tapering both ways from the centre, it preserves an almost equal thickness throughout its length, and tapers only in the width. It measures 14 inches in length, and 5 inches across the cutting face, and nowhere exceeds 1½ inch in thickness. A few examples, found in various parts of Scotland, are remarkable for their thinness in proportion to their breadth. They are mostly of a greenish stone, like a jadeite, sometimes of avanturine, but

Fig. 331.—Axe of Jadeite found on the banks of the Ericht (8 inches in length).

always of the finest make, beautifully finished, and highly polished. One, found on the banks of the Ericht, in Perth-

shire (Fig. 331), darkly mottled on the upper part, of a light lustrous green in the lower part, is 8 inches in length, by 3 inches in width across the cutting face, $\frac{3}{8}$ inch in thickness in the middle, and tapering equally to both ends.

Fig. 332.—Axe of Avanturine, ploughed up at Cunzierton, Roxburghshire ($7\frac{1}{2}$ inches in length).

Another of this flat triangular shape (Fig. 332), recently ploughed up at Cunzierton, Roxburghshire, is a beautifully formed instrument of green avanturine, nowhere more than $\frac{5}{8}$ inch in thickness. It measures $7\frac{1}{2}$ inches in length by $3\frac{3}{4}$ inches across the cutting face, tapering regularly to a pointed butt. Another implement, of a mottled greenish

stone, and slightly larger in size (though here drawn to a smaller scale as Fig. 333), was found in Glenjorrie Burn near Glenluce, Wigtownshire. It differs from the two last described in being almost flat on one side, and thinning from the centre towards the edges longitudinally as well as towards both ends. It measures 8¼ inches in length, and

Fig. 333.—Adze of Greenstone found near Glenluce, Wigtownshire (8¼ inches in length).

Fig. 334.—Stone Adze found at Little Barras, Kincardineshire (5¼ inches in length).

3¼ inches in width across the cutting face, tapering regularly to a pointed butt. Its greatest thickness in the centre is only ¾ inch. A form having both ends alike, but possessing the adze-like peculiarity of having one of its faces flattened longitudinally, occurs, both in flint, and occasionally in other materials. An example in greenstone from Little Barras, Drumlithie, Kincardineshire (Fig. 334), closely re-

sembles in form the more finely made specimen in polished grey flint from Ferny Brae, Slains,[1] to which reference has already been made. It is, however, somewhat more rounded on the flat face, and much less carefully finished. It measures 5¼ inches in length, 2 inches in breadth across the cutting face, tapering to 1¼ inch at the butt, and nowhere exceeds 1 inch in thickness.

This form, having both ends alike, more frequently presents an axe-shape with both faces alike. An example in felstone, from Kirklauchline, Wigtownshire (here drawn to a small scale, Fig. 335), measures 13 inches in length, by 3¾ inches wide at the cutting edge, and 2¾ inches at the butt. It is a pointed oval in the cross-section, tapering regularly to both ends from the centre, having one face slightly flatter than the other, and showing a slight expansion of the width towards both ends, so as to give a slightly incurved outline to the sides. A splendid specimen of compact greenstone from Stirlingshire (Fig. 336), measuring 13½ inches in length, by 3¼ inches in greatest width, exhibits the opposite tendency in its longitudinal outlines, the curves of the sides swelling gently outwards from both ends, so that its greatest width comes a little below the middle of its length. It is finely polished, and has the side edges ground flat, so

Fig. 335.—Stone Axe found at Kirklauchline, Wigtownshire (13 inches in length).

[1] Compare the engraving, Fig. 321, on p. 337.

Fig. 336.—Stone Axe from Stirlingshire (13½ inches in length).

that the cross-section is a longish oval with the pointed ends cut squarely off. Both ends are shaped alike, and

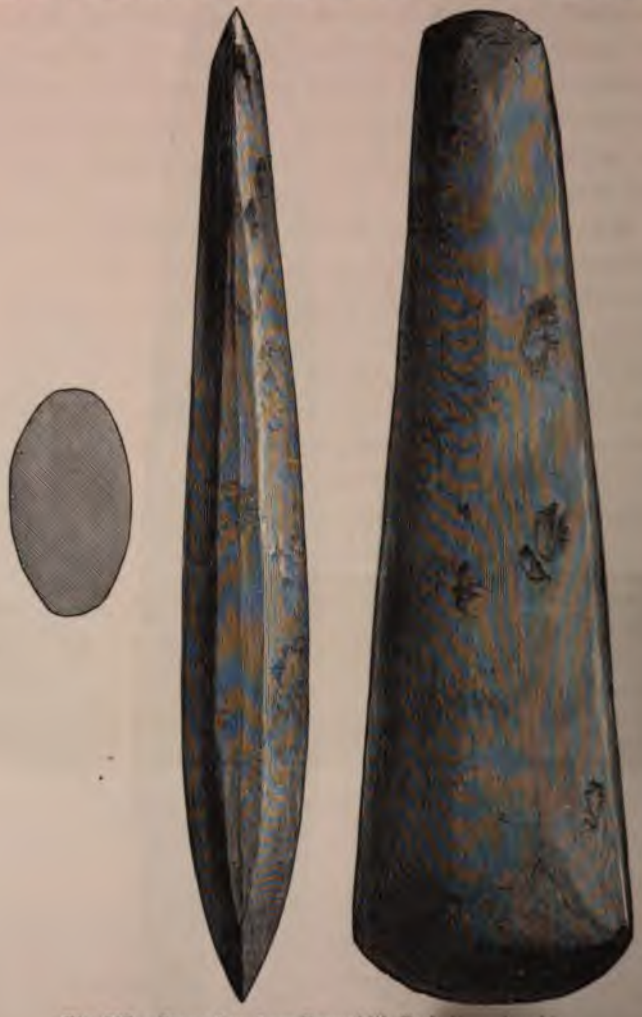


Fig. 337.—Stone Axe from Brownhill, Tarbolton, Ayrshire (10½ inches in length).

both nearly equally sharp. A fine [illegible] of a grey silicious stone, like a whetstone, but of g[illegible], found

at Brownhill, in the parish of Tarbolton, Ayrshire (Fig. 337), approximates in form to those of polished flint already described from Fochabers and Gilmerton.[1] It measures 10½ inches in length, and 3 inches across the cutting face, tapering to a width of 1⅞ inch at the small end, which is also finished with a sharp edge. The longitudinal edges of the implement are not ground flat, but slightly bevelled from both sides.

With regard to the grinding and polishing of these implements, the markings on the faces and edges of those in which the traces of the grinding have not been polished out, appear to indicate that the grinding was always accomplished by the manual labour of rubbing the implement either with or upon another stone, probably with the aid of sand and water. Grinding-stones, which appear to have been used for the finishing of stone axes, have been occasionally found in Scotland. Sometimes they are merely

Fig. 338.—Polygonal Grinding-stone of Quartzite (13½ inches in length).

rough boulders of a hard close-grained texture with elongated hollows worn by the grinding process. Occasionally a portable stone of this description seems to have been used. Such a portable grinding-stone of quartzite (Fig. 338), 13½ inches in length, 3 inches in width, and 2¾ inches in thickness, was found in excavating a drain on Lamberton

[1] See the engravings of these examples, Figs. 314 and 320, at p. 331 16.

Moor, Berwickshire. It has been worn to a polygonal shape, and bears on one of its broader sides three grinding or polishing faces, which have been worn to concave surfaces, highly polished by long-continued use. The concavities of these grinding surfaces are greatest towards the centre of the stone where the pressure of friction has been greatest. On one of its narrower sides two similar grinding faces are presented, and on the opposite side there is but one grinding face, broader and more concave than the others. The broader side opposite to that first described has not been used, and its surface is convex, instead of concave.

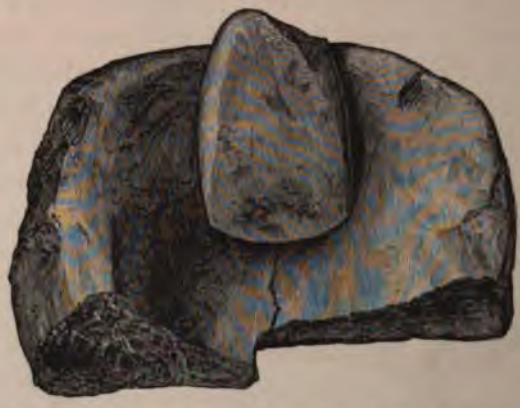


Fig. 339.—Grinding-stone with Stone Axe lying in its hollow (5 inches in length).

A grinding-stone of red sandstone, considerably hollowed by use, was found in the moor beside the sand-hills of Stoneykirk, in Wigtownshire. Upon it, when found, as in Fig. 339, there lay a small stone axe of Silurian schist, with a slightly convex edge and rounded butt. The Rev. George Wilson, who first described this grinding-stone, remarks, that though it is the only example yet recorded in Scotland of a stone axe having been found in such an association, several instances are reported from England in which flint

tools with ground edges have been found lying beside whetstones.[1]

There can be little doubt that, while the smaller and less finely finished examples of these imperforate axes are more of the nature of tools than weapons, a considerable number of the larger and more carefully finished and finely polished examples must be regarded as weapons. Indeed, it is not improbable that, as in historical times, the iron axe has served the double purpose of tool and weapon, the great majority of these stone axes may have been habitually used both as weapons and as tools. The consideration of their effective use in either capacity implies an investigation of the manner in which they were handled. Probably this was accomplished in various ways, analogous to the methods that are in use among the people who still use implements of stone. One method of mounting a stone axe in its handle, which is still practised by the inhabitants of New Guinea, is shown in Fig. 340. The axe-head is inserted

Fig. 340.—Axe of Diorite in its handle, from New Guinea (19 inches in length).

in the split end of a short piece of wood, and secured by a double lashing of twisted grass cords. The butt end of this piece of wood is tapered off and inserted in a circular hole passing through the thick end of the handle. In this case

[1] *Proc. Soc. Antiq. Scot.*, vol. iii. (New Series), p. 263.

the wooden mount which carries the axe-head is 6 inches in length; the axe-head projects 2 inches beyond the end of the mounting, and the handle which carries the mount is 19 inches in length. The adze-shaped stone implements of some of the South Pacific islanders (Fig. 341) are mounted differently. A kneed branch is selected, one limb of which is cut off short. In the split end of the shorter limb the adze-head is firmly secured by lashings of twisted grass, while the other end above the junction with the longer limb

Fig. 341.—Stone Adze in its Handle, from South Pacific.

Fig. 342.—Adze of Diorite in its Handle, from New Guinea (22 inches in length).

is tapered off, the long limb serving as the handle. In an example from New Guinea (Fig. 342), the knee which

carries the adze-head is 15 inches long, the adze-head projecting 2½ inches; the handle is 22 inches in length. In Australia the mode of hafting is by passing a bent withe round the body of the axe (Fig. 343), which is secured in

Fig. 343.—Stone Axe handled in a looped withe, from the Murray River, South Australia.

the loop of the withe by a mass of gum, the free ends of the loop being loosely fastened by a cord. In France and in the Swiss Lake Dwellings of the Stone Age a common method of hafting the smaller axes was by inserting them in

Fig. 344.—Stone Axe, with its handle, found in the Solway Moss.

mounts of deer-horn, mortised into wooden handles. The only insta in Scotland which affords direct evidence of he mann hich stone axes were handled (Fig. 344) is he British Museum, which was found by th of six feet, in the Solway

Moss, near Longtown. The axe is now quite loose in the handle, which has shrunk greatly in the drying, and is broken in several places. It is also evident from the mark of the wood upon the blade of the axe that it was inclined at a considerable angle, instead of being nearly vertical to the line of the handle, as here shown. In the Scottish Collection there are two specimens which show the mark of the handle as a dark band passing obliquely across the body of the implement. One of these is here shown (Fig. 345). It is of felstone, 8 inches in length, and 2 inches across the cutting face. It was found in a peat moss at Ervie, in the parish of Kirkcolm, Wigtownshire, and the darker mark of the handle is probably due to the discharge of the colour from the slightly decomposed surface.

Fig. 345.—Stone Axe from Ervie, showing mark of handle (8 inches in length).

There are other varieties of stone implements and weapons of Stone Age types, such as spear and arrow heads, knives, saws, borers, scrapers, and punch-like tools or "fabricators," which seem to have been used in the manufacture of the other varieties of implements. These are all made usually of flint, and for the most part fashioned and finished by chipping alone. The only exception is the knife, certain varieties of which are made in flint with a ground edge, and in schist, slate, or porphyry, with the whole surface of the implement ground smooth or polished.

The spear and arrow heads differ only in size, so that it is difficult to say where the one class ends and the other

begins. None of the flint spear-heads are very large, the largest in the National Collection (Fig. 346) being only 3 inches in length. It is a finely made lance-head of leaf shape, from the parish of Urquhart, Elginshire. Another spear or lance head from Machermore, Old Luce, Wigtownshire (Fig. 347), is triangular in form, with barbs and a central tang or stem for attachment to the shaft. It is 3 inches in length, and a portion of the point is wanting.

Fig. 346. — Leaf-shaped Spear-head, from Urquhart, Elginshire (3 inches in length).

Fig. 347.—Spear-head of Flint from Machermore, Wigtownshire (13 inches in length).

The arrow-heads are divisible by their form into the same two classes, leaf-shaped and triangular. The commonest form of the leaf-shaped variety is shown in Fig. 348, from the Culbin Sands, Elginshire. Occasionally the outlines have more convexity, the breadth is less, and the superior and inferior segments more nearly equal. In Fig. 349, which comes from Urquhart, Elginshire, the edges are finely serrated, the basal segment more convex, and the superior outlines straighter and more prolonged. In Fig. 350, from the Culbin Sands, Elginshire, the superior

edges exhibit a slight concavity of outline, and the basal edges a considerable convexity. The two specimens shown in Figs. 351, 352, of which the one comes from the Culbin Sands, Elginshire, and the other from Knockscreb, Torrs, in

Figs. 348, 349, 350.—Leaf-shaped Arrow-heads of Flint (actual size).

the parish of Old Luce, Wigtownshire, have both ends tapered to a sharp point. It seems probable that the leaf-shaped arrow-head may have been the earliest form, but, as has been already stated, both the leaf-shaped variety and

Figs. 351, 352.—Leaf-shaped Arrow-heads of Flint (actual size).

the triangular variety with barbs and a central stem, were found in the chambered cairn of Unstan, in Orkney.

The triangular form of arrow-head may be subdivided into two varieties—with, or without a central stem. Both

varieties are usually furnished with barbs, though some examples with a straight-based triangular outline are occasionally found. Of the class with barbs and a central tang or stem for attachment to the shaft, three specimens, characterised by the serration of their edges, are here presented. The first (Fig. 353), from Petty, near Fordoun, Kincardineshire, is a finely made example, the sides having a slight ogee curve and minutely serrated, the stem flattened and rounded at the base, the barbs long, and their bases slanting from the inner side backwards, so as to meet the outer edge of the curve of the sides at a sharp angle. The

Figs. 353, 354, 355.—Serrated Arrow-heads of Flint, with barbs and stem (actual size).

second example (Fig. 354), from Urquhart, Elginshire, is larger, the edges less finely serrated, the stem thicker, and the openings between it and the barbs less carefully made. The third (Fig. 355), also from Urquhart, is more triangular in outline, the serration much more coarsely executed, and the barbs less developed.

In the examples next shown the edges are not serrated. Fig. 356, found on the estate of Lanfine, in Ayrshire, is stout, and somewhat coarsely made. Fig. 357, also from Lanfine, is more elongated in proportion to its breadth, and the barbs tapered to sharper points. Fig. 358, from Glenluce, Wigtown-

shire, has the sides almost straight, the apertures between the barbs and stem most carefully made, and the bases of

Figs. 356, 357, 358.—Flint Arrow-heads, with barbs and stem (actual size).

the barbs slanting from the inner side forward, or in the contrary direction to those of Fig. 353. In the next group of three arrow-heads, Fig. 359 from Torrs, Old Luce, Wigtownshire, is a smaller specimen of the elongated form of Fig. 357, from Lanfine. Fig. 360, also from Torrs, is of the same elongated form, but differs in the shortness of the barbs and the excessive breadth of the tang or stem; while Fig. 361, from the Culbin Sands, Elginshire, has the sides

Figs. 359, 360, 361.—Flint Arrow-heads, with barbs and stem (actual size).

more distinctly curved, the barbs even shorter, and the stem almost quadrangular in section. Fig. 362, from Torrs,

Old Luce, Wigtownshire, has a broad stem trimmed off below to an angular point, and the bases of the barbs slightly rounded. Fig. 363, from the island of Shapinshay, in Orkney, has slightly curved outlines, the bases of the barbs also slanting slightly forward from the inner side

Figs. 362, 363, 364.—Flint Arrow-heads, with barbs and stem (actual size).

and the stem slightly tapering. Fig. 364, from Torrs, Old Luce, Wigtownshire, is nearly of the same form but less symmetrical. In Fig. 365, from the Culbin Sands, Elginshire, we have an example of an almost leaf-shaped outline with the base hollowed to a pointed stem. Fig. 366, also from the Culbin Sands, is another example of a similar form, but

Figs. 365, 366, 367.—Flint Arrow-heads, with barbs and stem (actual size).

broader in proportion to its length, and the stem thickened and more prolonged. Fig. 367, from Whitecrook, Old Luce, Wigtownshire, represents one of the smallest arrow-heads of this form in the National Collection.

The variety of triangular shaped arrow-head, with barbs,

but without a central tang or stem, is the least common of the various forms of these weapon points of flint. Fig. 368, from Ellon, Aberdeenshire, is remarkable for its stoutness in proportion to its length. Fig. 369 is a finely made specimen from Torrs, Old Luce, Wigtownshire, unfortunately broken at the point, but remarkable for its length and symmetry of form. Fig. 370, also from Torrs, Old Luce, more nearly resembles the example from Ellon. A strange variety of this stemless form of arrow-head is occasionally found, formed of a thin flat flake, with careful chipping

Figs. 368, 369, 370.—Flint Arrow-heads, with barbs, but stemless (actual size).

sometimes on one of its flat faces only, at other times trimmed from the edge on both faces, but usually unsymmetrical, and often with one long wing-like barb, which gives it a curious lop-sided appearance. Three specimens (Figs. 371-373) are here figured, from the Culbin Sands, Elginshire. An arrow-head of this description, found in one of the chambered cairns of Caithness, has been already noticed,[1] and several others have been found in different parts of the country.

We have no actual evidence of the mode of attaching

[1] See the description at p. 246, Fig. 245.

these barbed and tanged arrow-heads to the arrow-shaft. But there can be little doubt that the purpose of the stem

Figs. 371, 372, 373.—Flint Arrow-heads, stemless and unsymmetrical (actual size).

was its insertion in the cleft end of the shaft, which would then be bound with sinews, as is the case with the modern stone arrow-heads of some of the Californian Indian tribes (see Fig. 374). But we have the actual evidence of a single specimen of the leaf-shaped arrow-head, found in 1875, in a moss at Fyvie, Aberdeenshire, and fortunately preserved. When found, the shaft was entire to the length of about 9 inches. The workmen who found it unfortunately reduced its length to 3 inches by breaking pieces off it. It is also probable that the rough handling to which it was thus subjected may have caused the flint arrow-head to slip further into the cleft end of the shaft (which was then quite wet and soft), seeing that the

Fig. 374.—Arrow-head of Chert, attached to the shaft by sinews, from California.

split ends of the shaft now reach quite to the point of the arrow-head (Fig. 375). This, however, is the form invariably assumed by the socketed midrib of the spear-heads of bronze. The arrow-head is a very thin and finely made one, of pale yellow flint. The shaft is of a hard tough wood which I have been unable to identify. It has shrunk considerably in the drying. In all probability it would have been bound immediately behind the head by sinews, as shown in an example of a triangular arrow-head found in the moss of Geisboden, in Switzerland (Fig. 376). The inspection of this Fyvie arrow-shaft suggested to me the desirability of the investigation of the process by which such shafts might be produced with tools of flint. Accordingly, I selected a series of the most likely implements, consisting of (1) a large thick-backed knife-shaped flake, with a rough edge, to be used as a cross-cut saw; (2) a ridged triangular flake (Fig. 337), about 3 inches in length, having a considerable curve in the direction of its length; (3) a small finely worked knife-like implement (Fig. 378), of beautifully transparent flint, with a keen and

Fig. 375.—Arrow-head of Flint, still in the shaft, found in a moss at Fyvie, Aberdeenshire (actual size).

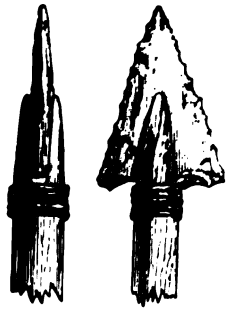
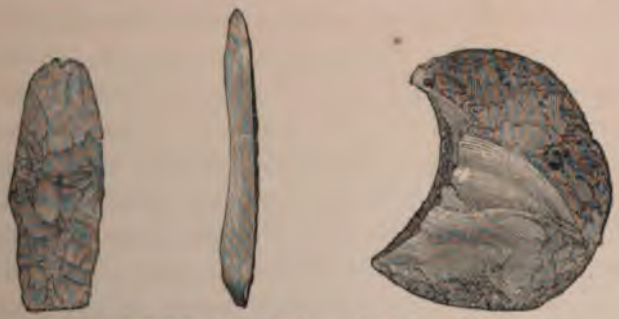


Fig. 376.—Arrow-head of Flint, in the shaft, found in the moss of Geisboden, Switzerland (actual size).

delicate edge; (4) a thin lancet-shaped flake (Fig. 379), to cut the cleft for the arrow-head, and (5) a curiously formed

Fig. 377.—Ridged Flake of Flint (3 inches in length).

disc-shaped implement (Fig. 380), with a semi-circular hollow on one side, which had a peculiarly bevelled edge, and which I conjectured to be a tool for planing arrow-shafts. I then procured a rough piece of pine-wood, a little over 18 inches in length, and 1 inch by rather more than $\frac{1}{2}$ inch in width and thickness. Having first sawn off the ends with the stout thick-backed flake, and thus reduced the rough piece of wood to 18 inches in length, I set to work



Figs. 378, 379, 380.—Flint Knives and Planing Implement for Arrow-shafts (actual size).

to discover how the thickness might be reduced to the form of an arrow-shaft. A multitude of experiments were tried

without success, when at last I saw that by bringing the bent part of the long flake (Fig. 377) obliquely over the piece of wood held endwise against the breast, with the flat side of the flake to the surface of the wood, and then drawing it quickly towards the body, the sharp edge, passing diagonally over the surface, stripped off shavings like a spokeshave. With a little practice I found that by this method I could strip off shavings 10 or 12 inches in length at every stroke. Wrapping a bit of soft leather round the butt-end of the flake to protect the fingers and give a firmer hold, I soon reduced the wood to the desired shape, though the surface remained rather rough and uneven. Then the question came to be how the surface was to be made smooth and even; and the hollow scraper (Fig. 380) was tried in several ways, with no satisfactory result. Experience and reflection at length enabled me to see that there was only one way in which the tool could be used efficiently. Placing one end of the arrow-shaft against the breast as before, embracing it between the two ends of the crescentic hollow in the side of the scraper, and then drawing the scraper quickly towards the body, with the opposing crescentic ends pressed firmly against the shaft (the one pressing upwards the other downwards), the drawing motion caused the sharp under-edge of the curve to act like the edge of a plane; and thus, by simply rotating the shaft during the operation, an equally smooth cylindrical surface was gradually produced. The notch for the string of the bow, in the butt-end of the shaft, was cut with the knife (Fig. 378), and the slit at the top, for the insertion of the arrow-head of flint, was readily cut with the thinner flake (Fig. 379). The feathers were cut and trimmed with the same implements, and tied on with sinews. A binding of sinew round the split point of the shaft, to secure the head in its place, completed the operation.

It is more difficult to classify those implements of flint

which are not of the nature of weapon points for use in war or in the chase. They seem, however, naturally to divide themselves chiefly into cutting and scraping implements, the former including generally such forms as may have served for knives and saws, and the latter the different varieties of the round-nosed tools denominated scrapers. After these comes a rarer series of tools, which seem to have served the purpose of awls or borers, and a set of implements of more ambiguous character which have been termed "fabricators" from their supposed use in connection with the manufacture of other flint implements, such as arrow-heads, etc. The groundwork of each of these implements is a flake, struck from a prepared core of flint, in such a manner that it presents a more or less triangular cross-section. Such flakes may be of any length, up to 5 or 6 inches, although in Scotland, where it is difficult to find blocks of flint of sufficient size, the flakes are usually small. Of course such a flake may be used for a variety of purposes connected with the cutting or scraping of softer materials, and many present evidence of having been so used, without any preparation by secondary working of the edge. It is obvious, for instance that a flake like that already instanced (Fig. 377), may be used either to cut or to scrape wood or bone, or deer-horn, as long as its edge retains its keenness. But the natural edge is soon blunted and broken, and when a tool of this kind was intended for continuous use, it was prepared by secondary working along its edges, and trimmed to a point more or less rounded or oval in form.

A fine example of the long lanceolate flake, having both edges trimmed, so that the secondary working meets the flat underside of the flake at an acute angle, and forms a cutting edge capable of being renewed by retrimming when worn or blunted by use, is here shown on a slightly reduced scale (Fig. 381). The original, which is 4½ inches in length,

and fully ¾ inch in extreme width, was found in the island of Rousay, in Orkney. The flake from which it was formed has a somewhat irregular curvature, shown in the side view, but the edges are carefully worked, and the untrimmed butt-end may have been inserted in a handle of wood to make it more effective as a cutting implement. But the knife of flint presents itself in a considerable variety of forms, frequently less suggestive of the purpose, and apparently less adapted to insure the efficiency of the implement. In Fig. 382, found in removing a large mound known as the Court-hill of Dalry, in Ayrshire, the blade is of triangular form, having the sharp edge formed by chipping from both faces in the same manner as the edges of the spear and arrow heads, while the opposite edge is bluntly rounded for convenience in holding the implement when in use. Another blade from the same place (Fig. 383), of more elongated form, oval at both ends, is rounded by secondary working on the ridged back of the flake, the under-side flat, and the edges considerably blunted by use. It is of course impossible to affirm that implements like these were not as often used for scraping as for cutting, and I adduce these instances merely for the purpose of showing how the knife-like implement of flint passes, on the one hand, into the triangular or leaf-shaped form of the arrow or spear head, and on the other hand, into

Fig. 381.—Flint Knife found in Rousay, Orkney (4½ inches in length).

a form undistinguishable from that of the scraper. The two examples here figured (Figs. 384, 385), from Torrs, Old Luce,

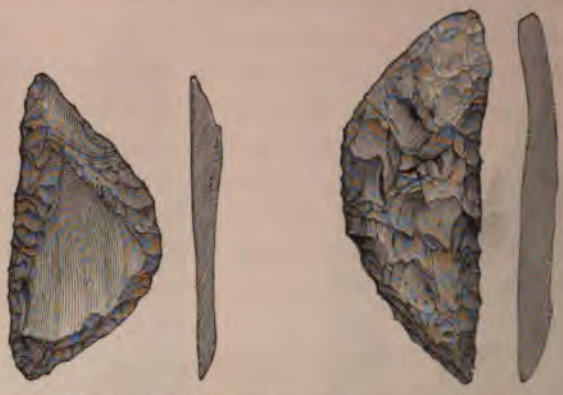
Figs. 382, 383.—Flint Flakes, trimmed for cutting or scraping (actual size).

Wigtownshire, are thinner and more knife-like in form. In Figs. 386, 387, from the Culbin Sands, Elginshire, we observe

Figs. 384, 385.—Trimmed Knives or Scrapers of Flint (actual size).

a characteristic individuality of form and workmanship, which indicates a more efficient implement, with greater definiteness

and specialty of purpose. They are formed of thin flakes, carefully worked to a sharp edge all round, and, though of



Figs. 386, 387.—Flint Knives from the Culbin Sands, Elginshire (actual size).

small size, they are not smaller than the rough chips of obsidian which the New Zealanders formerly used as cutting instruments. Fig. 388 represents a single-edged scraper-shaped knife of agate, found in a cairn at Hatton, in the

Figs. 388, 389.—Flint Knives, single and double-edged (actual size).

parish of Monikie, Forfarshire; and Fig. 389, a double-edged oval blade of reddish flint from the Culbin Sands. The

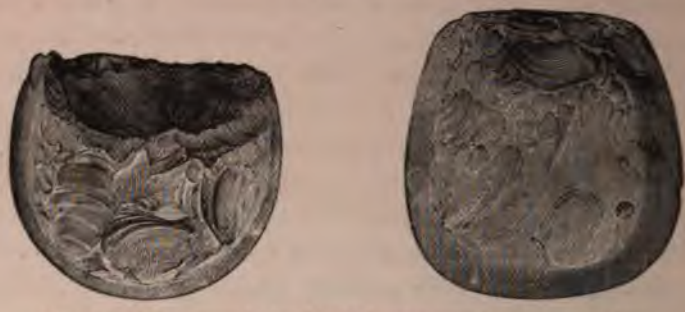
variety of blade in which the edge is ground, instead of chipped, is of much rarer occurrence. Two examples have already been cited from chambered cairns in Caithness.[1] One, almost precisely similar in size and shape, and formed of dark-coloured flint, was found in Urquhart, Elginshire. It measures 2¼ inches in length, and ½ inch in greatest breadth, has one end neatly rounded, and its edge carefully ground. Another, of slightly larger size, formed of grey flint, from Strachur, Argyllshire, is 2⅞ inches in length, and ¾ inch in greatest breadth, the ends neatly trimmed, the back rounded, and the edge carefully ground (Figs. 390, 391).

Figs. 390, 391.—Flint Knives, with ground edges, from Urquhart and Strachur (actual size).

There is another, almost similar to this, from Blelak, Aberdeenshire. A more peculiar form of flint blade is of discoidal shape, and has the semicircular edge sharpened by grinding from both faces. One, found near Kintore, Aberdeenshire (Fig. 392), measures 3 inches by 2⅞ inches. Another, from Fordoun, Kincardineshire (Fig. 393), measures 3⅜ inches by 3¾ inches, and at its thickest part is less than ½ inch in thickness. There is a third specimen in the Museum, from Lanarkshire. A series of large, flat, irregularly oval blades (Fig. 394) of porphyritic stone or madreporite, found only in

[1] See the descriptions, p. 241, Fig. 244; and p. 253, Fig. 251.

Shetland, have sharper edges, sometimes continued round the whole circumference, sometimes with slightly thickened



Figs. 392, 393.—Ground-edged Flint Implements, found near Kintore and near Fordoun (3 inches and 3¼ inches in length).

and blunted backs. They are ground to a smooth even surface on their flat faces.[1] Another form of knife (Fig. 395),

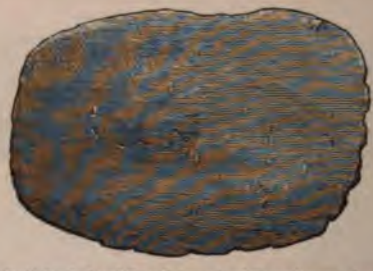


Fig. 394.—Polished Oval Implement of Porphyry, from Shetland (5¼ inches in length).

of which only one complete example exists in the Museum, appears also to be peculiar to Shetland—at least, it has not yet been found in any other British locality, though the type is known in the northern parts of Norway. It is

[1] Dr. D. Wilson states, in his *Prehistoric Annals of Scotland* (vol. i. p. 184), that implements mostly of this class were found in the mosses of Blair-Drummond and Meiklewood. There is, however, no extant evidence to prove that the stone implements so found were of this special type, which is peculiar to the Shetland Islands. So far as yet known, no existing example has been traced to any other locality.

a long blade of fissile shale or slaty sandstone, with a more or less convex edge, a thickened back, and a projecting tang-like handle. This specimen is 9½ inches in length, and 2½

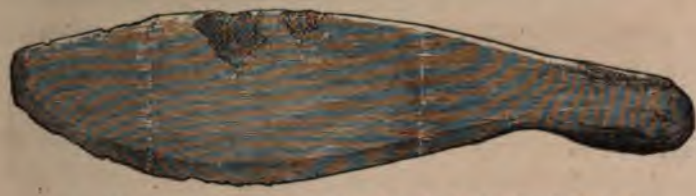


Fig. 395.—Knife of Sandstone, from Shetland (9½ inches in length).

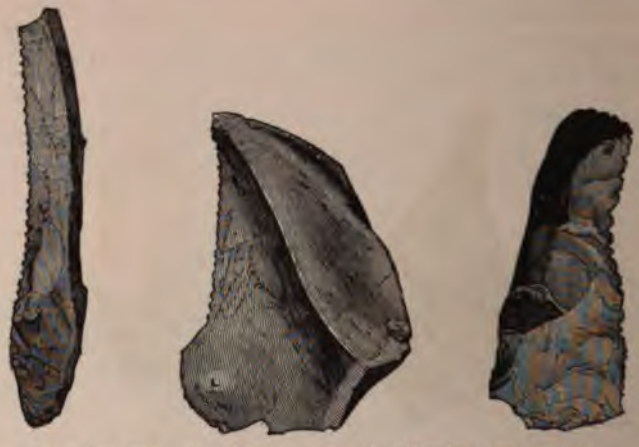
inches across the widest part of the blade. Its surface is ground smooth all over, and the edge is sharpened by grinding from both faces. This variety of implement appears to have been very abundant, though, owing to its extreme thinness and consequent fragility, it is but seldom that an

Figs. 396, 397.—Fragments of Knives of Schist, from Shetland.

entire specimen is met with. There are, however, upwards of twenty fragments in the Museum (Figs. 396, 397) which exhibit with greater or less distinctness the peculiar features of the type.[1]

[1] For an account of the Norwegian examples, see the *Foreningen for Norske Mindesmærker's Bevaring, Aarsberetning* for 1877, p. 105.

The flint saw is simply a flake, trimmed to an edge which is jagged, instead of being sharpened either by chipping or grinding. They are usually of small size, and sometimes the teeth are formed with extreme regularity and fineness. The three specimens here figured, of different varieties of form (Figs. 398, 399, 400), are from the sands of Glenluce, in Wigtownshire. Though of less frequent occurrence than knives of flint, they are by no means rare, the number of specimens in the Museum now exceeding sixty.



Figs. 398, 399, 400.—Flint Saws found at Glenluce (actual size).

Of course there is nothing against the supposition that both knives and saws may have been occasionally fixed in handles of wood, or bone, or horn. Such handled implements have been found in the Swiss Lake Dwellings, but there is no clear evidence that any of the Scottish specimens were provided with handles of any kind. They may have been used, as New Zealanders used chips of obsidian, for knives, held simply between the forefinger and thumb, or as some of the Australian tribes used their roughly flaked knives of stone, with a piece of the skin of an animal wound

round the butt-end of the flake to enable them to grasp it more firmly.

Flint tools which seem to have been intended for awls or borers are not of very common occurrence. They are of two varieties, a long-pointed form which may have been used for piercing holes in soft materials, such as skins, and a shorter pointed form, which may have been used for drilling holes in harder materials. A very characteristic specimen of the first form is here figured from Galston, Ayrshire (Fig. 401), and an equally characteristic example of the second form is shown in the specimen from the Culbin Sands, Elginshire (Fig. 402).

Figs. 401, 402.—Borers of Flint (actual size).

The implements which, for want of a better name, have been styled "fabricators" or "flaking tools," are long and chisel-shaped, with a slightly lozenge-shaped section. They usually present "a blunted, worn, and rounded appearance at one or both ends, as if resulting from attrition against a hard substance;" and Mr. Evans has suggested "that their purpose may have been for chipping out arrow-heads and other small instruments of flint."[1] Whether this may have been their purpose or not, the typical form of these implements is

[1] *Ancient Stone Implements of Great Britain*, p. 367.

sufficiently characteristic. They are by no means common in Scotland. The Museum possesses two from Kincardineshire, one of which, from Fordoun, is here figured (Fig. 403) to a scale of three-fourths of the actual size; the third, which

Fig. 403.—Flint Implement or Fabricator, from Fordoun (¾ of actual size).

Fig. 404.—Flint Implement or Fabricator, from Corennie (actual size).

is represented in the Museum by a cast, is figured (Fig. 404) of the actual size. It was found on the Hill of Corennie, Aberdeenshire. A fourth, from Unstan, is shown in Fig. 283.

The "scraper" of flint is a round-nosed flake, which has

the semicircular end chipped to a bevelled edge (as shown in Fig. 405), from Urquhart, Elginshire. They are usually flat on the under side, having the upper side trimmed to a ridged or irregularly convex form, but some are flat both on the upper and under sides. They vary extremely in size, some being from 2 to 3 inches in length, and others less than a ¼ inch in diameter. It is difficult to regard these smaller-sized examples as complete implements, although many of them might be used for scraping purposes if fixed in a handle of bone or wood, and a tool precisely similar has been found in use among the Esquimaux for scraping or currying skins. But as the long scraper of flint has been found in connection with interments, associated with a broken nodule of iron pyrites, bearing the marks of scraping, the obvious inference is that one use of the so-called scraper was that of a strike-light. A scraper of flint, much worn on the semicircular edge from use (Fig. 407), and a broken nodule of iron pyrites, bearing the marks of the friction of a round-nosed tool along the central portion of its flat face (Fig. 406), were recently found in association with a cremated burial at Flowerburn, Ross-shire, by Major Mackenzie.[1] But while it is thus obvious that many of these implements

Fig. 405.—Flint Scraper, front, back, and side views, found at Urquhart (2½ inches in length).

[1] *Proc. Soc. Antiq. Scot.*, vol. xix. p. 352. For similar instances in England, see Evans's *Ancient Stone Implements of Great Britain*, pp. 282, 286, and Greenwell's *British Barrows*, p. 41.

may have been employed as a means of producing fire with a nodule of pyrites of iron, in the same manner as the flint and steel were used before the introduction of the easier method of modern times, there can be no doubt that many of these implements were used for scraping purposes in

Figs. 406, 407.—Strike-light Implements. Nodule of Pyrites of Iron, and Scraper of Flint, found together at Flowerburn, Ross-shire.

connection with the dressing of skins and the preparing and finishing of tools and appliances in wood and bone. They differ only in having long necks or short necks, and the bevelling more or less continued along the side of the implement. In the example from Torrs, Old Luce, Wigtownshire (Fig. 408), the implement presents the ridge of the flake as a midrib down the back, and the bevelling of the edge is continued along one of the sides. The example from Gullane Links (Fig. 409) is similarly ridged down the back, and bevelled along one edge, but is shorter and broader in proportion to its length, and more obtusely pointed. The commoner form of short-necked scraper is shown in Figs. 410, 411, both from Elginshire.

These implements and weapons of chipped flint are found over the whole of the mainland of Scotland, as well as in many of the outlying isles. They are found in districts

Fig. 408.—Scraper of Flint, found at Torrs, Old Luce, Wigtownshire (3 inches in length).

Fig. 409.—Scraper of Flint found at Gullane (2¼ in. in length).

Figs. 410, 411.—Scrapers of Flint, from Elginshire (actual size).

where natural nodules of flint are unknown, as well as in districts where the supply of the material is more abundant. Although flint is nowhere very abundantly found in Scotland, there are certain localities which furnish transported nodules in greater abundance than others, and in these localities there is always evidence of the practice of a long-continued and wide-spread industry in the fabrication of implements and weapons from the raw material. This evidence consists of innumerable chippings and splinters of flint, often accumulated in particular spots, as if from the continuous working of a single individual, or a group of individuals. A closer examination of the mass of splinters usually reveals the fact that among them are many flakes, cores, and unfinished implements; and not unfrequently hammer and anvil stones, and even perfectly finished knives, saws, arrow-heads, or axes may be occasionally found, although the rule is that only the waste products of the manufacture are met with. From these, and from experimental knowledge of the qualities of the material, the processes of the fabrication may be to some extent inferred. The tools were apparently for the most part naturally formed pebbles of quartz or quartzite, of a shape and size convenient for the purpose for which they were used. The larger pebbles, often of the shape and size of a cobbler's lapstone, seem to have been used as anvil-stones, while the smaller pebbles, of such size and shape as could be conveniently grasped in the hand, have been used as hammer-stones. This is rendered evident by the fact that the larger or anvil-stones are worn considerably into irregularly hollowed depressions on their flat faces, while the smaller or hammer-stones are worn convexly on their ends. The method of producing long, slender, and regularly shaped flakes from a core of flint which is practised by the modern gun-flint makers with steel tools, has often been described. Dr. John

Evans, who taught himself the art, has recorded it as his experience, "that blows from a rounded pebble, judiciously administered, are capable of producing well-formed flakes, such as in shape cannot be distinguished from those made with a metallic hammer." The main difficulties, he says, "consist first in making the blow fall exactly in the proper place; and secondly, in so proportioning its intensity that it shall simply dislodge a flake without shattering it. The pebble employed as a hammer need not be attached to a shaft, but can be used without any preparation in the hand."

When the inferences deduced from an examination and comparison of the chips, flakes, and cores, which compose the refuse of these ancient flint workshops, are compared with the results of the methods still employed, whether by savage arrow-makers or civilised manufacturers of gun-flints and strike-lights, the ancient methods of workmanship are found to coincide with the natural properties of the material and the modern processes so far as these go. But the ancient flint-workers went further than modern knowledge and modern skill can follow them. There are some of their processes which have not been discovered by modern science, and some of their products which cannot be imitated by modern skill, with all its ingenuity of contrivance and all its resources of means and appliances.

Dr. John Evans, although he succeeded by the use of stag's-horn tools in producing something like the ordinary surface-chipping of the ancient flint-workers, confesses that the method invented and practised by them of producing the regular fluting, like ripple-marks, by detaching parallel splinters uniform in size and extending almost across the surface of a lance or spear head, is at present a mystery. This process was commonly practised by the prehistoric flint-workers of almost all the countries of Europe in which flint implements are found. But it is a process which is not

now known or practised by any of the tribes of savages who still work in stone, and it is therefore a lost art to them, as well as a mystery to the man of science.

In speaking of the qualities of workmanship that are manifested by the extremely delicate manipulation of objects so small in their size and yet so elaborately and carefully finished, it is impossible to demonstrate their characteristics otherwise than by reference to the objects themselves, which must be seen and closely studied before the beauty of their forms and the delicacy of their finish can be adequately appreciated. These qualities are necessarily less apparent in the larger examples, but in many of the smaller they are present in a more remarkable manner than in any other class of the products of human handicraft, ancient or modern, which are not of the nature of jewels or articles of personal adornment. So obviously is this the case that they are not unfrequently mounted and worn as pendants in necklaces, and in other adaptations of modern jewellery. No such fact is without its significance. These products of the Age of Stone were made for use, and not for ornament, and yet they exhibit qualities of form and workmanship which give them an ornamental character, and thus enable them to be fitly associated with the productions of the decorative art of modern times.

I have already drawn attention to the fact that the typical form of the stone axe is a form which is specially suited to the properties of the material and the purposes of the implement. Looking at the specialty of form which has been given to the axe of iron, in view of the special properties of the material, and their adaptation to the special purposes of the instrument, no one would hesitate to recognise it as a product of culture. And looking at the peculiar specialty of form which has been given to the implement of stone, and given to it also in view of the

peculiar properties of its material, I cannot have any hesitation in recognising it also as a product of culture. In doing this I pronounce no judgment on the relative quality of the varieties of culture that have produced the two kinds of implements. But if it be a legitimate deduction that the special adaptation of the form of the implement when fashioned in the one material implies culture, the same deduction follows as a necessary consequence from the special adaptation of its form when fashioned in the other material. I am not now instituting a comparison of the relative efficiency of the implements as between that fashioned in the one material and that fashioned in the other. I speak merely of the facts that the employment of the one material established a certain typical form for the implement; that the use of the other material established another typical form for the same implement; and that these two different results—each consequent on the use of a different material establishing a special adaptation of form—were products of culture existing in the people using the materials. Reviewing the whole phenomena of the Stone Age as these are manifested in Scotland, we find them affording evidences of capacity and culture in the individual, associated with evidences of civilisation in the community. We find their weapons and ornaments fashioned in forms that combine beauty of outline with symmetry and grace of proportion. We find the workmanship of the best examples faultless, the polish perfect, and the edge as regular and finely drawn from the face of the instrument as it is possible to make it with the aid of machinery and scientific appliances. The application of intellect and energy to the perfection of the art of working in stone is effected in directions that are different from those adopted by workers in metals; and therefore the culture of the lapidary is a culture which is not the same

as the culture of the founder or the smith. But it would be manifestly absurd to say that the application of intellect and handicraft to the perfection of an art is culture when it is directed to one material, and is not culture when it is directed to another—that culture may be manifested in bronze and iron, and silver and gold, but not in bone or ivory, or jet or stone.

It would be equally absurd to say that the application of intellect and experience to the perfection of an art is culture when it is directed to one method of operation, and is not culture when it is directed to another method; in other words, that it is culture which is manifested in the working of stone by grinding, and that it is not culture which is manifested in the working of the same material by chipping. The generalisation which leads to a conclusion that grinding or polishing an implement of stone implies higher capacity and more advanced culture than is implied in the formation of an implement by simple chipping, is completely at variance with the most obvious facts regarding the nature and character of chipped and polished implements of stone. The methods of finishing the surface and trimming the edges of many of these chipped implements are the results of reflection and experience applied to the nature of the implement itself, and the qualities of the material of which it is made. There are certain classes of implements of flint which were never ground smooth on the surface, or sharpened to a smoothly ground edge, because the chipped surface and the trimmed edge were better adapted to their purpose. Some varieties of unground, unpolished implements, wholly fashioned and finished by chipping alone, belong not only to the most advanced period of the Stone Age, but were used long into, and apparently throughout, the Age of Bronze.

The rudeness which is the result of incapacity, and the rudeness which is the result of skill and calculation, in

certain cases, may closely resemble each other; but in drawing conclusions as to the capacity or incapacity of the workman from the mere rudeness of workmanship there must be discrimination. In the finer forms of these chipped implements it is manifest that their rudeness is the result of processes carefully adapted to the properties of the material, and performed with a dexterity only to be acquired by practice and experience. That their surfaces are always unsmoothed, while other implements found with them are finely polished, is evidence that the absence of polish in them is the result of intention, and not of incapacity. And that this abstention from all effort to produce a smoother finish of surface and outline than that which results from the merely constructional process ought rather to be commended as a merit than censured as a defect in the workman's culture, seems plain from the fact that the form, when thus finished, possesses a character of fitness and beauty which is universally acknowledged. This character is the result of a single process, perfected to a pitch of delicacy and refinement which is now unattainable. That process, which the ancient workers invented and brought to such perfection, is the very process which scientific investigation has now shown to be the most suitable to the qualities of the material they employed. This material was selected by them in preference to all others, and we cannot doubt that it was so selected on account of its special suitability to the purpose in view, although it is not abundant, and must always have been difficult to procure, in Scotland. Is it possible, then, to conclude that there is no evidence of culture in such manifestations of knowledge and skill—in such adaptations of means and materials to definite ends and purposes? It is doubtless true that the culture which they may indicate must necessarily have differed from the culture of the Bronze Age, as the Bronze Age culture must necessarily have differed

from that of the Iron Age; but it seems equally undeniable that whatever may be the amount of its difference from these or from existing varieties of culture, the evidence which has been adduced is relevant and sufficient to prevent the conclusion that the members of the Stone Age communities were destitute of capacity and devoid of culture.

Again, when we consider the aggregates of individuals in whom this culture existed, we find them possessing social organisations sufficient for the construction of works of enormous magnitude. We find them exhibiting in these constructions a common agreement strong enough to control the general expression of the form and character of their sepulchral monuments over an area so wide as from Caithness to Cornwall. These vast sepulchral constructions, which are necessarily the work of aggregates, are thus in their nature and significance essentially evidences of civilisation. The manner of its expression is doubtless different from that which now prevails, and the man who now subscribes his guineas to the public memorial of a leading citizen removed by death would then have performed the same duty by adding stones to his cairn. But it is the outward form of the act alone which differs; its inward significance remains the same. As time rolls on and fashions change with the ever-increasing complexities of social organisation, the methods of expression may be altered or may be improved; but will any one say that the moral feeling and sense of public duty which then found expression in the manner of the time were less moral and less dutiful than those which find expression now in the manner of our time, or that the thing signified in the erection of a Stone Age cairn is not essentially the same as that which is signified in the erection of a statue or a modern monument?

In this man of the Stone Age, whose capacity, culture, and civilisation are thus made dimly visible to us by the

relics of his life and the memorials of his dead—this maker of finely formed and admirably finished tools and implements in stone—this builder of great sepulchral monuments that are completely structural, we have reached the typical representative of primeval man in Scotland. There is no evidence of the existence within our area of any representative type of man of higher antiquity or of lower culture than this. I have chosen to lead up to the consideration of his condition and culture by carrying the investigation back from the historic to the prehistoric, from the well known to the less known, from the comparatively recent to the regions of extreme antiquity. I chose this method because it seemed that by thus proceeding from conditions that are already familiar to us, we might be enabled to appreciate more justly the significance of conditions that are unfamiliar to our experience, and to perceive more clearly that in thus unravelling the manifold complications of the interlinked successions of types and systems that bind the ages together, we may be tracing gradations of advancement from civilisation to civilisation, and from culture to culture. It is true that we possess no means of converting the significance of these early manifestations into equivalents of the culture and civilisation which now exist. But if it be also true—as all experience shows that it is true—that the types and systems of the present give birth to those of the future, and were themselves begotten of the past, it follows that the early culture and civilisation were but younger states or stages of those which now exist; and, thus regarding them, I cannot but conclude that they were younger states or stages of the highest as well as of the lowest of the modern forms.

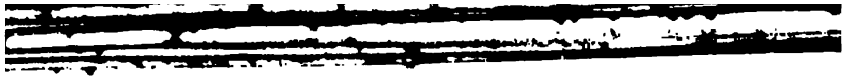
And now, looking back over the way we have traversed together, and having regard both to the manner and to the

results of the investigation in which we have been engaged, I may say that I shall have failed in one of its principal objects if it has not been demonstrated that it may be possible from purely scientific materials, by purely scientific methods, to construct a logical, though not a chronological, history of culture and civilisation within a given area sufficiently wide to comprehend a series of representative types—that the logical history thus established deals with the succession of types, and the stages of Culture, but does not deal with the determination of dates, or the measurement of the duration of periods, which being the peculiar products of record, pertain exclusively to the province of chronological history—that as the conditions and phenomena of man's existence in one region cannot be taken as necessarily those of another, these conditions and phenomena must be ascertained by direct investigation for a wide series of separate areas before there can exist a scientific basis for the inductions of comparative Archæology—and that the historic and the prehistoric stages of human existence within the same area do not differ necessarily in the essential nature of their conditions and phenomena, although there is necessarily a radical difference in the manner in which these conditions and phenomena are presented to our intelligence.

If this has been successfully demonstrated, the method of the demonstration will also have disclosed the paramount importance of form and decoration in the determination of type; and the significance of systems of ornament as affording indications of the conditions of culture by their character, and determining the sequence of these conditions by their development. The disclosure of that significance will also have shown that it may be possible to deal with the ornament of the prehistoric ages as an index of culture in much the same manner as the student of culture might deal with language and literature as supplying materials for his deductions

with respect to the historic period, because the sequences of the systems of decoration are found to follow the same order as the sequences of the forms and materials to which the decoration is applied. But most of all, I hope it may have been made clear that it is not the knowledge of the various dates of the different specimens, but the knowledge of their types—not the knowledge of their precise uses, but the knowledge of their precise areas—not the knowledge of the measure of antiquity that may belong to them, but of the quality of the culture they indicate, that are the primary objects of their investigation.

Besides these more general indications, it may have become evident to those who have followed the whole of the four courses of these Lectures, that, taken together, they are parts of one continuous demonstration, the outcome of which is that Scotland has an Archæology—disclosing a succession of manifestations of culture and phases of civilisation peculiar to her own area; and that she must therefore of necessity create and maintain her own school of investigation.



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